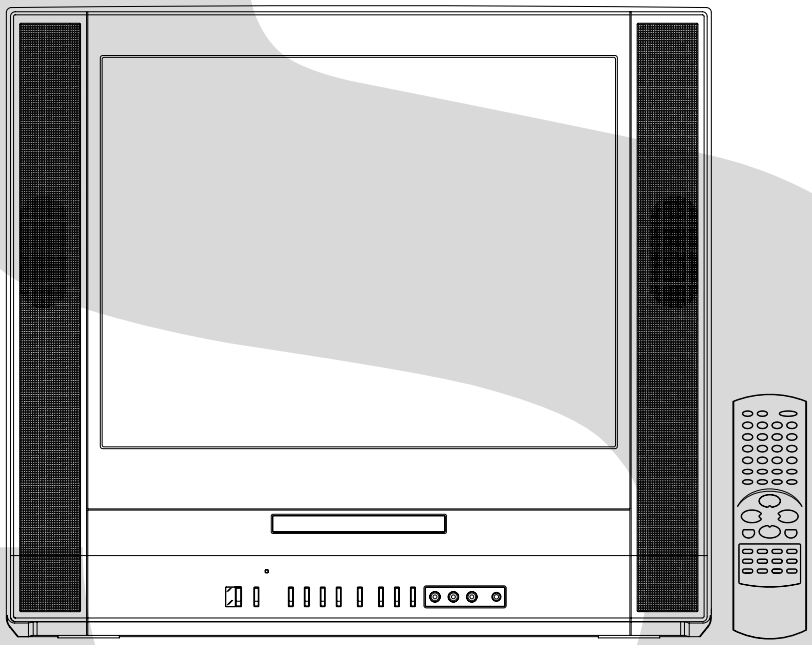
TOSHIBA

FILE NO. 140-200408

SERVICE MANUAL

COLOR TELEVISION/ DVD VIDEO PLAYER

MD20FP3



DOCUMENT CREATED IN JAPAN, Feb., 2004

CAUTION

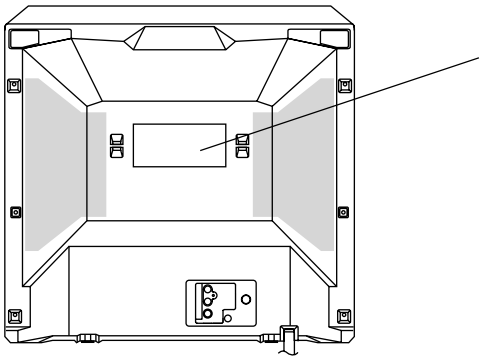
THIS DIGITAL VIDEO PLAYER EMPLOYS A LASER SYSTEM.

TO ENSURE PROPER USE OF THIS PRODUCT, PLEASE READ THIS SERVICE MANUAL CAREFULLY AND RETAIN FOR FUTURE REFERENCE. SHOULD THE UNIT REQUIRE MAINTENANCE, CONTACT AN AUTHORIZED SERVICE LOCATION-SEE SERVICE PROCEDURE.

USE OF CONTROLS, ADJUSTMENTS OR THE PERFORMANCE OF PROCEDURES OTHER THAN THOSE SPECIFIED HEREIN MAY RESULT IN HAZARDOUS RADIATION EXPOSURE.

TO PREVENT DIRECT EXPOSURE TO LASER BEAM, DO NOT TRY TO OPEN THE ENCLOSURE. VISIBLE LASER RADIATION MAY BE PRESENT WHEN THE ENCLOSURE IS OPENED. DO NOT STARE INTO BEAM.

Location of the required Marking
The rating sheet and the safety caution are on the rear of the unit.



PREPARATION OF SERVICING

The laser diode used for a pickup head may be destroyed with external static electricity.
Moreover, even if it is operating normally after repair, when static electricity discharge is received at the time of repair, a life of product may become short.
Please perform the following measure against static electricity, be careful of destruction of a laser diode enough at the time of repair, and work.

- It works on the desk which performed measures against static electricity, such as conductive mat.
- Soldering iron with ground wire or ceramic type is used.
- A worker needs to use a ground conductive wrist strap for body.

SERVICING NOTICES ON CHECKING

1. KEEP THE NOTICES

As for the places which need special attentions, they are indicated with the labels or seals on the cabinet, chassis and parts. Make sure to keep the indications and notices in the operation manual.

2. AVOID AN ELECTRIC SHOCK

There is a high voltage part inside. Avoid an electric shock while the electric current is flowing.

3. USE THE DESIGNATED PARTS

The parts in this equipment have the specific characters of incombustibility and withstand voltage for safety. Therefore, the part which is replaced should be used the part which has the same character.
Especially as to the important parts for safety which is indicated in the circuit diagram or the table of parts as a ⚠ mark, the designated parts must be used.

4. PUT PARTS AND WIRES IN THE ORIGINAL POSITION AFTER ASSEMBLING OR WIRING

There are parts which use the insulation material such as a tube or tape for safety, or which are assembled in the condition that these do not contact with the printed board. The inside wiring is designed not to get closer to the pyrogenic parts and high voltage parts. Therefore, put these parts in the original positions.

5. TAKE CARE TO DEAL WITH THE CATHODE-RAY TUBE

In the condition that an explosion-proof cathode-ray tube is set in this equipment, safety is secured against implosion. However, when removing it or serving from backward, it is dangerous to give a shock. Take enough care to deal with it.

6. AVOID AN X-RAY

Safety is secured against an X-ray by considering about the cathode-ray tube and the high voltage peripheral circuit, etc.
Therefore, when repairing the high voltage peripheral circuit, use the designated parts and make sure not modify the circuit.
Repairing except indicates causes rising of high voltage, and it emits an X-ray from the cathode-ray tube.

7. PERFORM A SAFETY CHECK AFTER SERVICING

Confirm that the screws, parts and wiring which were removed in order to service are put in the original positions, or whether there are the portions which are deteriorated around the serviced places serviced or not. Check the insulation between the antenna terminal or external metal and the AC cord plug blades. And be sure the safety of that.

(INSULATION CHECK PROCEDURE)

1. Unplug the plug from the AC outlet.
2. Remove the antenna terminal on TV and turn on the TV.
3. Insulation resistance between the cord plug terminals and the eternal exposure metal **[Note 2]** should be more than 1M ohm by using the 500V insulation resistance meter **[Note 1]**.
4. If the insulation resistance is less than 1M ohm, the inspection repair should be required.

[Note 1]

If you have not the 500V insulation resistance meter, use a Tester.

[Note 2]

External exposure metal: Antenna terminal

HOW TO ORDER PARTS

Please include the following informations when you order parts. (Particularly the VERSION LETTER.)

1. MODEL NUMBER and VERSION LETTER
   The MODEL NUMBER can be found on the back of each product and the VERSION LETTER can be found at the end of the SERIAL NUMBER.
2. PART NO. and DESCRIPTION
   You can find it in your SERVICE MANUAL.

IMPORTANT SAFEGUARDS

1. **READ INSTRUCTIONS**
   All the safety and operating instructions should be read before the unit is operated.
2. **RETAIN INSTRUCTIONS**
   The safety and operating instructions should be retained for future reference.
3. **HEED WARNINGS**
   All warnings on the unit and in the operating instructions should be adhered to.
4. **FOLLOW INSTRUCTIONS**
   All operating and use instructions should be followed.
5. **CLEANING**
   Unplug this unit from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.
6. **ATTACHMENTS**
   Do not use attachments not recommended by the unit's manufacturer as they may cause hazards.
7. **WATER AND MOISTURE**
   Do not use this unit near water. For example, near a bathtub, washbowl, kitchen sink, or laundry tub, in a wet basement, or near a swimming pool.
8. **ACCESSORIES**
   Do not place this unit on an unstable cart, stand, tripod, bracket, or table. The unit may fall, causing serious injury, and serious damage to the unit. Use only with a cart, stand, tripod, bracket, or table recommended by the manufacturer.

PORTABLE CART WARNING
(symbol provided by RETAC)

S3125A

8A. An appliance and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the appliance and cart combination to overturn.

9. **VENTILATION**
   Slots and openings in the cabinet and in the back or bottom are provided for ventilation, to ensure reliable operation of the unit, and to protect it from overheating. These openings must not be blocked or covered. The openings should never be blocked by placing the unit on a bed, sofa, rug, or other similar surface. This unit should never be placed near or over a radiator or heat source. This unit should not be placed in a built-in installation such as a bookcase or rack unless proper ventilation is provided or the manufacturer's instructions have been adhered to.
10. **POWER SOURCES**
    This unit should be operated only from the type of power source indicated on the rating plate. If you are not sure of the type of power supply to your home, consult your appliance dealer or local power company. For units intended to operate from battery power, or other sources, refer to the operating instructions.
11. **GROUNDING OR POLARIZATION**
    This unit is equipped with a polarized alternating-current line plug (a plug having one blade wider than the other). This plug will fit into the power outlet only one way. This is a safety feature. If you are unable to insert the plug fully into the outlet, try reversing the plug. If the plug should still fail to fit, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the polarized plug. If your unit is equipped with a 3-wire grounding-type plug, a plug having a third (grounding) pin, this plug will only fit into a grounding-type power outlet. This too, is a safety feature. If you are unable to insert the plug into the outlet, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the grounding-type plug.
12. **POWER-CORD PROTECTION**
    Power-supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the appliance.
13. **LIGHTNING**
    To protect your unit from a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet and disconnect the antenna or cable system. This will prevent damage to the unit due to lightning and power line surges.
14. **POWER LINES**
    An outside antenna system should not be located in the vicinity of overhead power lines or other electric light or power circuits, or where it can fall into such power lines or circuits. When installing an outside antenna system, extreme care should be taken to keep from touching such power lines or circuits, as contact with them might be fatal.
15. **OVERLOADING**
    Do not overload wall outlets and extension cords, as this can result in a risk of fire or electric shock.
16. **OBJECT AND LIQUID ENTRY**
    Do not push objects through any openings in this unit, as they may touch dangerous voltage points or short out parts that could result in fire or electric shock. Never spill or spray any type of liquid into the unit.

IMPORTANT SAFEGUARDS (CONTINUED)

17. OUTDOOR ANTENNA GROUNDING

If an outside antenna or cable system is connected to the unit, be sure the antenna or cable system is grounded so as to provide some protection against voltage surges and built-up static charges. Section 810 of the National Electrical Code, ANSI/NFPA 70, provides information with respect to proper grounding of the mast and supporting structure, grounding of the lead-in wire to an antenna discharge unit, size of grounding conductors, location of antenna discharge unit, connection to grounding electrodes, and requirements for the grounding electrode.

18. SERVICING

Do not attempt to service this unit yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.

19. DAMAGE REQUIRING SERVICE

Unplug this unit from the wall outlet and refer servicing to qualified service personnel under the following conditions:

a. When the power-supply cord or plug is damaged.
b. If liquid has been spilled, or objects have fallen into the unit.
c. If the unit has been exposed to rain or water.
d. If the unit does not operate normally by following the operating instructions. Adjust only those controls that are covered by the operating instructions, as an improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the unit to its normal operation.
e. If the unit has been dropped or the cabinet has been damaged.
f. When the unit exhibits a distinct change in performance, this indicates a need for service.

20. REPLACEMENT PARTS

When replacement parts are required, be sure the service technician uses replacement parts specified by the manufacturer or those that have the same characteristics as the original parts.
Unauthorized substitutions may result in fire, electric shock or other hazards.

21. SAFETY CHECK

Upon completion of any service or repairs to this unit, ask the service technician to perform safety checks to determine that the unit is in proper operating condition.

22. WALL OR CEILING MOUNTING

The product should be mounted to a wall or ceiling only as recommended by the manufacturer.

23. HEAT

The product should be situated away from heat sources such as radiators, heat registers, stoves, or other products (including amplifiers) that produce heat.

24. DISC TRAY

Keep your fingers well clear of the disc tray as it is closing. It may cause serious personal injury.

25. CONNECTING

When you connect the product to other equipment, turn off the power and unplug all of the equipment from the wall outlet. Failure to do so may cause an electric shock and serious personal injury. Read the owner's manual of the other equipment carefully and follow the instructions when making any connections.

26. SOUND VOLUME

Reduce the volume to the minimum level before you turn on the product. Otherwise, sudden high volume sound may cause hearing or speaker damage.

27. SOUND DISTORTION

Do not allow the product output distorted sound for a longtime. It may cause speaker overheating and fire.

28. HEADPHONES

When you use the headphones, keep the volume at a moderate level. If you use the headphones continuously with high volume sound, it may cause hearing damage.

29. LASER BEAM

Do not look into the opening of the disc tray or ventilation opening of the product to see the source of the laser beam. It may cause sight damage.

30. DISC

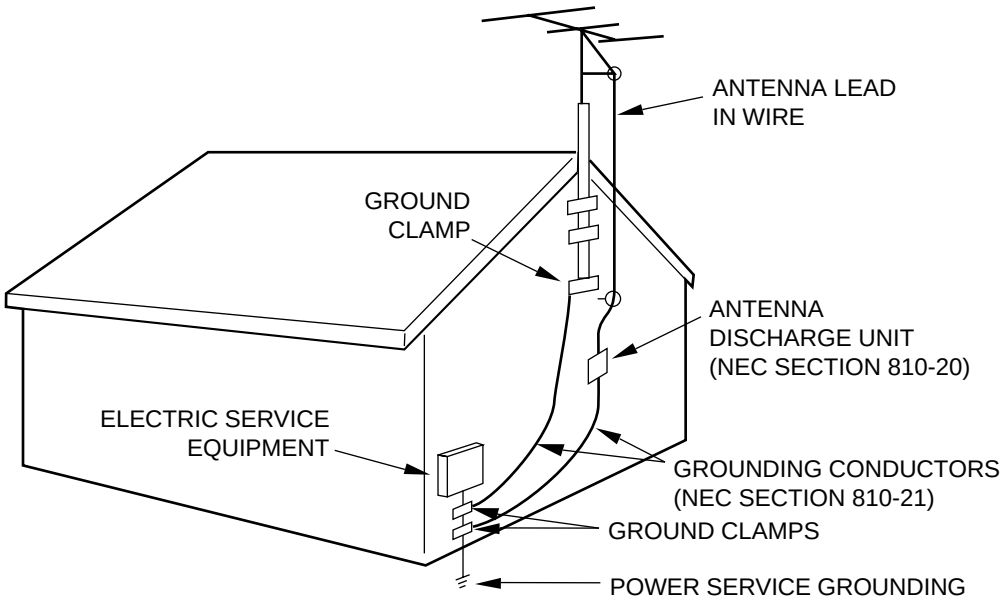
Do not use a cracked, deformed, or repaired disc. These discs are easily broken and may cause serious personal injury and product malfunction.

31. NOTE TO CATV SYSTEM INSTALLER

This reminder is provided to call the CATV system installer's attention to Article 820-40 of the NEC that provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building, as close to the point of cable entry as practical.

IMPORTANT SAFEGUARDS (CONTINUED)

EXAMPLE OF ANTENNA GROUNDING AS PER THE NATIONAL ELECTRICAL CODE



DISC REMOVAL METHOD AT NO POWER SUPPLY

1. Remove the Back Cabinet and AV PCB/DVD Block. **(Refer to item 1 of the DISASSEMBLY INSTRUCTIONS.)**
2. Rotate the white gear of Deck CD section in the direction of the arrow by hand. **(Refer to Fig. 1)**
3. Draw the Tray.

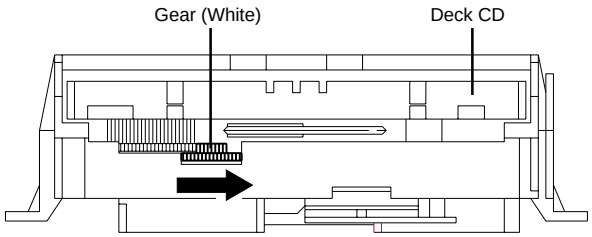


Fig. 1

PARENTAL CONTROL - RATING LEVEL

4 DIGIT PASSWORD CANCELLATION

If the stored 4 digit password in the Rating Level menu needs to be cancelled, please follow the steps below.

1. Turn Unit ON.
2. Press and hold the 'STOP' key on the front panel.
3. Simultaneously press and hold the '7' key on the remote control unit.
4. Hold both keys for more than 3 seconds.
5. The On Screen Display message 'PASSWORD CLEAR' will appear.
6. The 4 digit password has now been cleared.

NB: The above procedure will reset ALL of the player's settings to the default factory state.

TRAY LOCK

Tray cannot be opened by setting the Tray Lock, please follow the steps below.

1. Turn Unit ON.
2. Set the DVD to the Stop Mode.
3. Press and hold the '9' key on the remote control unit.
4. Simultaneously press and hold the 'STOP' key on the front panel.
5. Hold both keys for more than 3 seconds.
6. Press the OPEN/CLOSE key on the front panel to check the Tray Lock setting.

NB: No indications on the screen when the Tray Lock is setting.

To unlock the Tray Lock, please follow the steps below.

1. Turn Unit ON.
2. Set the DVD to the Stop Mode.
3. Set the VOLUME to minimum.
4. Press and hold the 'VOL. DOWN' button on the front panel.
5. Simultaneously press and hold the '4' key on the remote control unit.
6. Hold both keys for more than 1 second.
7. The On Screen Display message 'INITALIZE5 COMPLETE' will appear.
8. The Tray Lock has now been cleared.

NB: The above procedure will reset ALL of the player's settings to the default factory state.

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GENERAL SPECIFICATIONS

G-1	**TV System**	CRT	CRT Size / Visual Size		20 inch / 508.0 mmV
			CRT Type		Flat
			Deflection		90 degree
			Magnetic Field BV/BH		+0.45G / 0.18G
		Color System			NTSC
		Speaker			2 Speaker
			Position		Front
			Size		1.8 x 3.9 Inch
			Impedance		8 ohm
		Sound Output	Max		5W + 5W
			10%(Typical)		5W + 5W
G-2	**DVD System**	Color System			NTSC
		Disc			DVD, CD-DA, CD-R/RW, Video CD
		Disc Diameter			120 mm , 80 mm
		Deck	Disc Loading System		Front Loading
			Motor		2 Motors
		Pick up			1-Lens 2-Beams System
		Playback time(Max)	DVD 1-Layer		135min (4.7GB)
			DVD 2-Layer		245min (8.5GB)
			CD		74min
			Video CD		74min
		Search speed	Fwd		2-20 times / 4 step
				Actual	2-45 times (DVD, VIDEO CD)
					4-40 times (CD)
			Rev		2-20 times / 4 step
				Actual	2-45 times (DVD, VIDEO CD)
					4-40 times (CD)
		Slow speed			Fwd 1/7 - 1/2 times
				Actual	--
					Rev 1/7 - 1/2 times
				Actual	--
G-3	**Tuning System**	Broadcasting System			US System M
		Tuner and Receive CH	System		1Tuner
			Destination		US(w/CATV)
			Tuning System		F-Synth
			Input Impedance		VHF/UHF 75 Ohm
			CH Coverage		2~69, 4A, A-5~A-1, A~I, J~W, W+1~W+84
		Intermediate Frequency	Picture(FP)		45.75MHz
			Sound(FS)		41.25MHz
			FP-FS		4.50MHz
		Preset CH			No
		Stereo/Dual TV Sound			US-Stereo
		Tuner Sound Muting			Yes
G-4	**Signal**	Video Signal	Input Level		1 V p-p/75 ohm
			Output Level		--
			S/N Ratio (Weighted)		--
			Horizontal Resolution at DVD Mode		--
					--
		RGB Signal	Output Level		--
		Audio Signal	Input Level		-8.0dBm/50k ohm
			Output Level		--
			Digital Output Level		0.5 V p-p/75 ohm
			S/N Ratio at DVD (Weighted)		--
			Harmonic Distortion		--
			Frequency Response :	at DVD	--
				at Video CD	--
				at SVCD	--
				at CD	--

GENERAL SPECIFICATIONS

G-5	**Power**	Power Source		AC	120V, 60Hz
				DC	--
		Power Consumption		at AC	115W at 120V 60Hz
				at DC	--
				Stand by (at AC)	4W at 120V 60Hz
				Per Year	-- kWh/Year
		Protector		Power Fuse	Yes
G-6	**Regulation**			Safety	UL
				Radiation	FCC
				X-Radiation	DHHS
				Laser	DHHS
G-7	**Temperature**			Operation	+5oC ~ +40oC
				Storage	-20oC ~ +60oC
G-8	**Operating Humidity**				Less than 80% RH
G-9	**On Screen**	Menu(TV)			Yes
	Display		Menu Type		Icon
			TV Setup		Yes
				Picture	Yes
				Audio	Yes
				Picture Preference	Yes
			Channel Setup		Yes
				TV/CATV	Yes
				Auto CH Memory	Yes
				Add/ Delete	Yes
			V-chip Setup		Yes
			Language		Yes
		Sleep Timer			Yes
		CH / AV(LINE) / DVD			Yes
		Stereo/Audio Output			Yes
				Bilingual	No
				SAP	Yes
		Control Level	Volume		Yes
			Bright / Contrast / Sharpness / Color		Yes
			Tint		Yes
			Bass/Treble/Balance		Yes
		Caption / Text			Yes
		Auto Search/Position			No
		Game			Yes
		Mute			Yes

GENERAL SPECIFICATIONS

G-10	**On Screen Display**	Menu (DVD)			Yes	
			Menu Type		Character	
			Language		Yes	
				Menu	Yes	
				Subtitle	Yes	
				Audio	Yes	
			Picture		Yes	
				TV Screen Size	Yes	
				OSD Display On/Off	Yes	
				JPEG Interval	No	
				Select Files	No	
			Sound		Yes	
				DRC (Dynamic Range Control)	Yes	
				dts Decode	No	
				Output(5.1ch/ 2ch)	No	
				Surround On/Off	No	
				Center On/Off	No	
				Sub Woofer On/Off	No	
			Parental		Yes	
				Password Lock/ Un Lock	Yes	
				Rating Level	Yes	
			Other		Yes	
				OSD Language(Set up Language)	Yes	
				Output(RGB/Composite)	No	
			Open		Yes	
			Close		Yes	
			No disc		Yes	
			Reading		Yes	
			Play		Yes	
			Still/Pause		Yes	
			Stop		Yes	
			Prohibit Mark		Yes	
			Step		Yes	
			Skip(>>|)		Yes	
			Skip(|<<)		Yes	
			Random		Yes (CD, VIDEO CD)	
			Repeat		Yes	
			Slow+ ##		Yes	
			Slow- ##		Yes	
			Search+ ##		Yes	
			Search- ##		Yes	
			Jump		Yes	
			Resume		Yes	
			Title No.		Yes	
			Chapter No.		Yes	
			Track No.		Yes	
			Time		Yes	
			Sub Title No.		Yes	
			Angle No.		Yes	
			Vocal On/Off		Yes	
			Audio No.		Yes	
			Audio Stereo L/R		Yes (Video CD)	
			Zoom		Yes	
			Marker No.		No	
			Program Play Back		Yes (CD, VIDEO CD)	
			Surround On/Off		No	
			Screen Saver		No	
			MP3, WMA, JPEG	Folder Name	No	
				File Name	No	
				File No	No	
				Time	No	
				Track No	No	
G-11	**OSD Language**	(TV)			English, French, Spanish	
		(DVD)			English, French, Spanish	
G-12	**Clock and Timer**	Sleep Timer	Max Time		120 Min	
			Step		10 Min	
		On/Off Timer	Program(On Timer / Off Timer)		No	
		Wake Up Timer			No	
		Timer Back-up (at Power Off Mode)	more than		-- Min Sec	

GENERAL SPECIFICATIONS

G-13	**Remote Control**	Unit		RC-GD
		Glow in Dark Remocon		Yes
		Format		NEC
		Custom Code		71-8E h
		Power Source	Voltage(D.C)	3V
			UM size x pcs	UM-4 x 2 pcs
		Total Keys		45 Key
		Keys	Power	Yes
			1	Yes
			2	Yes
			3	Yes
			4	Yes
			5	Yes
			6	Yes
			7	Yes
			8	Yes
			9	Yes
			0	Yes
			Play	Yes
			Stop	Yes
			Search+	Yes
			Search-	Yes
			Skip+	Yes
			Skip-	Yes
			Slow+	Yes
			Slow-	Yes
			Pause	Yes
			Call	Yes
			TV/DVD	Yes
			Cancel	Yes
			Audio Select	Yes
			Angle	Yes
			Subtitle	Yes
			Top Menu	Yes
			Set up/ Menu	Yes
			DVD Menu	Yes
			Return	Yes
			Up/ Set+/ CH Up	Yes
			Down/ Set-/ CH Down	Yes
			Left/Select-/Vol Down	Yes
			Right/Select+/Vol Up	Yes
			Select/ Enter	Yes
			Play Mode	Yes
			Closed Caption	Yes
			Input Select	Yes
			Repeat A-B	Yes
			Zoom/ Quick View	Yes
			Mute	Yes
			Open/Close	Yes
			Sleep	Yes
			Jump	Yes
			Game	Yes

GENERAL SPECIFICATIONS

G-14	**Features**	CATV		Yes
		Auto Shut Off		Yes
		Auto CH Memory		Yes
		V-Chip	USA V-chip	Yes
			CANADA V-chip	No
		Auto Search		No
		SAP		Yes
		Game Position		Yes
		FM Transmitter		No
		Energy Star		Yes
		Closed Caption		Yes
		Comb Filter (2lines)		Yes
		Protect of FBT Leak Circuit		Yes
		Choke Coil		No
		Power On Memory		No
		Tray Lock		Yes
		Parental Lock (DVD Only)		Yes
		Video CD Playback		Yes
		SVCD Playback		No
			Overlay Graphics And Text	No
			Command List	No
			Entry Point Jump	No
		MP3 Playback		No
		WMA Playback		No
		JPEG Playback		No
		Digital Out	(Dolby Digital)	Yes
			(MPEG)	Yes
			(PCM)	Yes
			(DTS)	Yes
		Down Mix Out	(Dolby Digital)	Yes
			(DTS)	No
		Surround (Tru Surround)		No
		Screen Saver		No
		Picture Preference		Yes
		Auto Setup		Yes
		Audio DAC		192kHz / 24bit
G-15	**Accessories**	Owner's Manual	Language	English
			w/Guarantee Card	Yes
		Remote Control Unit		Yes
		Battery		Yes
			UM size x pcs	UM-4 x 2 pcs
			OEM Brand	No
		Rod Antenna		No
			Poles	No
			Terminal	--
		Loop Antenna		No
			Terminal	--
		U/V Mixer		No
		300 ohm to 75 ohm Antenna Adapter		Yes
		Antenna Change Plug		No
		Guarantee Card		No
		Registration Card		Yes
		Warranty Card		No
		ESP Card		No
		Service Station List		No
		DC Car Cord (Center+)		No
		Columbia Offer Sheet		No
		Sheet Information (Return)		Yes

GENERAL SPECIFICATIONS

G-16	**Interface**	Switch	Front	Power (Tact)	Yes
				Channel Up	Yes
				Channel Down	Yes
				Volume Up	Yes
				Volume Down	Yes
				Play	Yes
				Open/Close	Yes
				Skip(>>|)	Yes
				Skip(|<<)	Yes
				Still/Pause	No
				Stop	Yes
				Main Power SW	No
			Rear	Main Power SW	No
		Indicator		Power	Yes (Red)
				Stand-by	No
				On Timer	No
		Terminals	Front	Video Input	RCA x 1
				Audio Input	RCA x 2(Stereo)
				Other Terminal	Head Phone
			Rear	Video Input	RCA x 1
				Audio Input	RCA x 2(Stereo)
				Video Output	No
				Audio Output	No
				Digital Audio Output	Coaxial (DVD Only)
				Diversity	No
				DC Jack 12V(Center +)	No
				VHF/UHF Antenna Input	F Type
G-17	**Set Size**			Approx. W x D x H (mm)	574x481.5x514.5
G-18	**Weight**			Net (Approx.)	25.0kg (55.1lbs)
				Gross (Approx.)	28.5kg (62.8lbs)
G-19	**Carton**		Master Carton		No
				Content	--- Sets
				Material	--- / ---
				Dimensions W x D x H(mm)	---
				Description of Origin	---
			Gift Box		Yes
				Material	Double/Full Color
				W/Color Photo Label	No
				Dimensions W x D x H(mm)	660 x 575 x 625
				Design	As Per Buyer 's
				Description of Origin	Yes
			Drop Test	Natural Dropping At	1 Corner / 3 Edges / 6 Surfaces
				Height (cm)	31
			Container Stuffing (40' container)		216 Sets
G-20	**Material**		Cabinet	Front	PS 94V0 DECABROM
				Rear	PS 94V0 DECABROM
				Jack Panel	-
			PCB	Non-Halogen Demand	No
				Eyelet Demand	Yes
G-21	**Environment**		Pb Free	Lead-free Solder	No
				Other	No
			Cd Free		No

DISASSEMBLY INSTRUCTIONS

1. REMOVAL OF MECHANICAL PARTS AND P.C. BOARDS

1-1: BACK CABINET (Refer to Fig. 1-1)

1. Remove the 7 screws ①.
2. Remove the screw ② which are used for holding the Back Cabinet.
3. Remove the AC cord from the AC cord hook ③.
4. Remove the Back Cabinet in the direction of arrow.

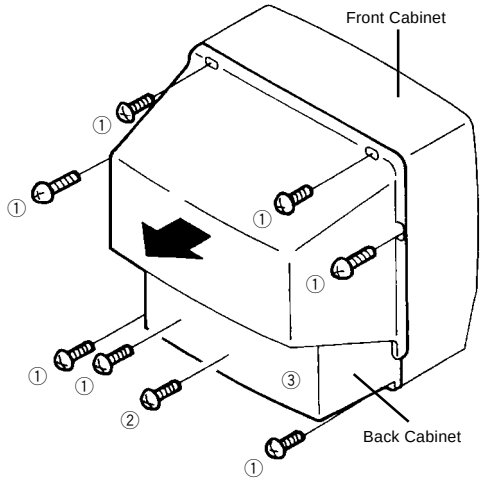


Fig. 1-1

1-2: CRT PCB (Refer to Fig. 1-2)

CAUTION: BEFORE REMOVING THE ANODE CAP, DISCHARGE ELECTRICITY BECAUSE IT CONTAINS HIGH VOLTAGE. BEFORE ATTEMPTING TO REMOVE OR REPAIR ANY PCB, UNPLUG THE POWER CORD FROM THE AC SOURCE.

1. Remove the Anode Cap. (Refer to REMOVAL OF ANODE CAP)
2. Disconnect the following connector: (CP801).
3. Remove the CRT PCB in the direction of arrow.

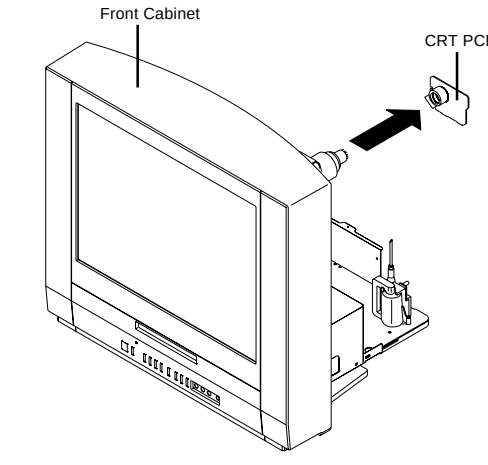


Fig. 1-2

1-3: AV PCB/DVD BLOCK (Refer to Fig. 1-3)

1. Remove the 2 screws ①.
2. Disconnect the following connectors: (CP301, CP302, CP401 and CP3800).
3. Remove the AV PCB/DVD Block in the direction of arrow.

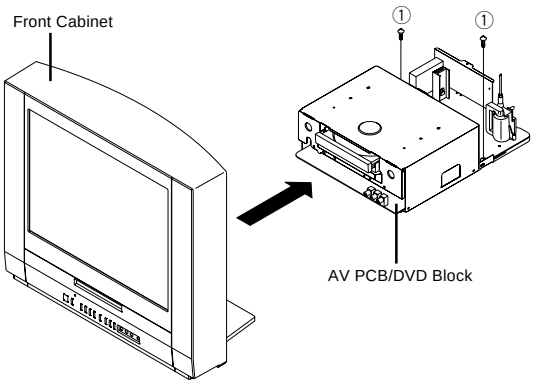


Fig. 1-3

1-4: DVD BLOCK (Refer to Fig. 1-4)

1. Remove the 11 screws ①.
2. Remove the Top Shield in the direction of arrow (A).
3. Disconnect the following connectors: (CP8001 and CP8002).
4. Remove the 4 screws ②.
5. Remove the DVD Block in the direction of arrow (B).
6. Remove the 2 screws ③.
7. Remove the Jack Shield.
8. Remove the AV PCB in the direction of arrow (C).

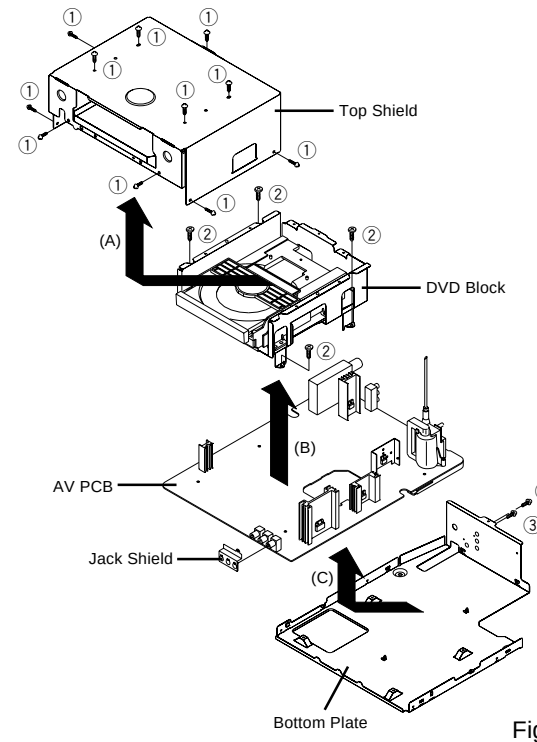


Fig. 1-4

DISASSEMBLY INSTRUCTIONS

1-5: DVD PCB/DVD DECK (Refer to Fig. 1-5)

1. Make the short circuit on the position as shown **Fig. 1-5** using a soldering. If you remove the DVD Deck with no soldering, the Laser may be damaged.
2. Unlock the 2 supports ①.
3. Remove the Front Tray Plate in the direction of arrow (A).
4. Disconnect the following connectors: (CP2601, CP2602 and CP2603).
5. Remove the 4 screws ②.
6. Remove the DVD Deck in the direction of arrow (B).
7. Remove the 4 screws ③.
8. Remove the DVD PCB in the direction of arrow (C).

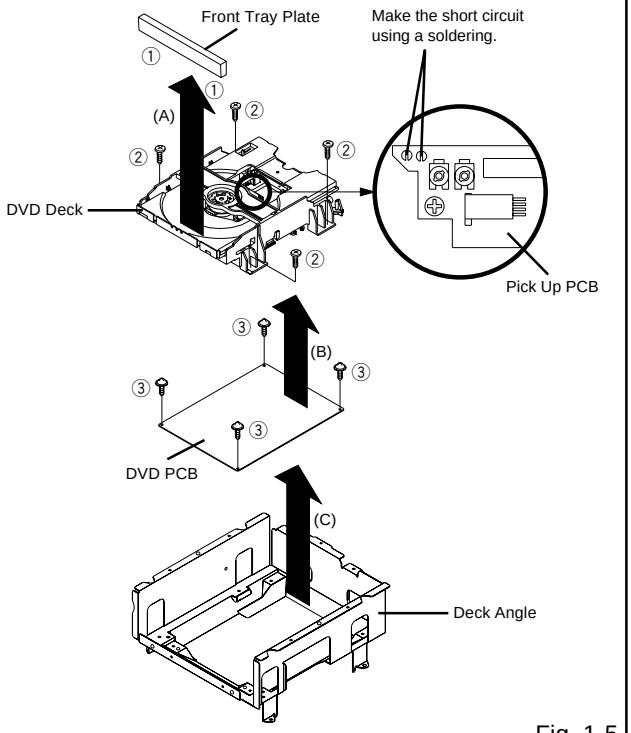


Fig. 1-5

NOTE

When the installation of the DVD Deck, remove all the soldering on the short circuit position after the connection of Pick Up PCB and DVD PCB connector.

DISASSEMBLY INSTRUCTIONS

2. REMOVAL OF DVD DECK PARTS

NOTE

1. Do not disassemble the DVD DECK PARTS except listed parts here. Minute adjustments are needed if the disassemble is done. If the repair is needed except listed parts, replace the DVD MECHA ASS'Y.

2-1: TRAY (Refer to Fig. 2-1-A)

1. Set the Tray opened. **(Refer to the DISC REMOVAL METHOD AT NO POWER SUPPLY)**
2. Unlock the support ① and remove the Tray.

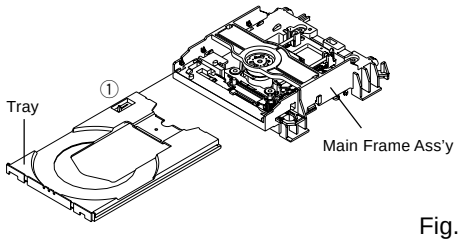


Fig. 2-1-A

NOTE

1. In case of the Tray installation, install them as the circled section of Fig. 2-1-B so that the each markers are met.

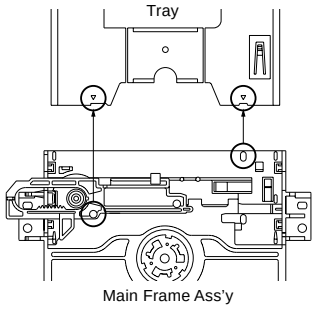


Fig. 2-1-B

2-2: MAIN CHASSIS ASS'Y (Refer to Fig. 2-2-A)

1. Remove the Main Chassis Ass'y from the Insulator (R).
2. Unlock the support ①.
3. Remove the Main Chassis Ass'y.

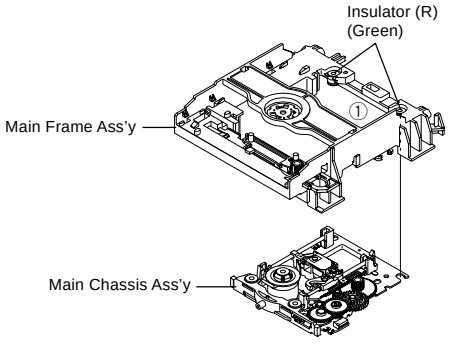


Fig. 2-2-A

NOTE

1. In case of the Main Chassis Ass'y, install it from (1) to (6) in order. **(Refer to Fig. 2-2-B)**

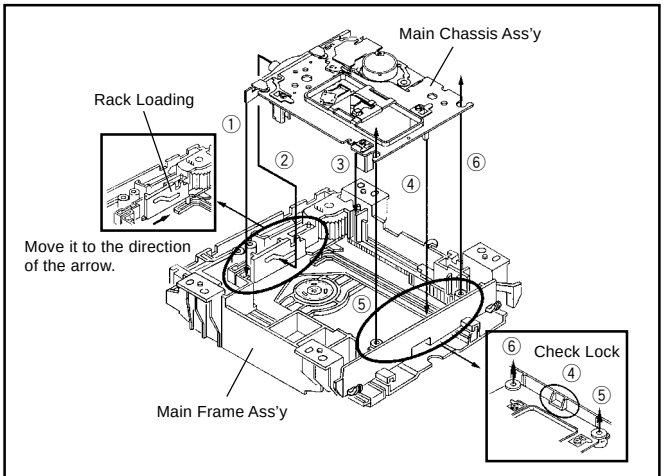


Fig. 2-2-B

2-3: RACK LOADING/MAIN GEAR/ RACK LOADING SPRING/ RACK L SPRING (Refer to Fig. 2-3)

1. Remove the Rack L Spring.
2. Press down the catcher ① and slide the Rack Loading.
3. Remove the Rack Loading, Rack Loading Spring and Main Gear.

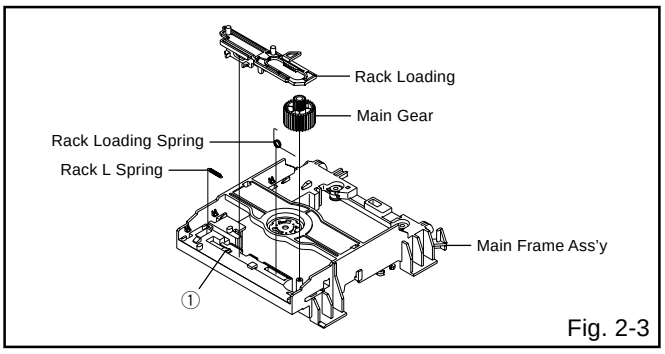


Fig. 2-3

2-4: CLAMPER ASS'Y/INSULATOR(R)/LEVER SWITCH (Refer to Fig. 2-4-A)

1. Remove the screw ①.
2. Remove the Lever Switch.
3. Remove the 2 Insulator (R).
4. Press the Clamper and rotate the Clamper Plate clockwise, then unlock the 3 supports ②.
5. Remove the Clamper Plate, Clamper Magnet and Clamper.

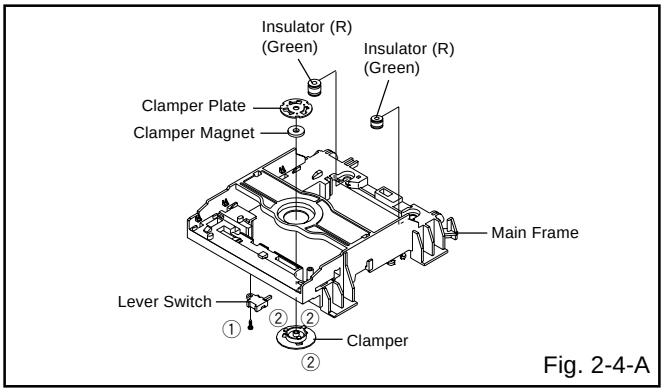


Fig. 2-4-A

DISASSEMBLY INSTRUCTIONS

NOTE

1. When installing the Clamper Magnet, install it with the green face up.
2. When installing the wire of the Lever Switch, install it correctly as Fig. 2-4-B.
3. When installing the Lever Switch, install it correctly as Fig. 2-4-C.
4. In case of the Lever Switch installation, hook the wire on the Main Frame as shown Fig. 2-4-D.

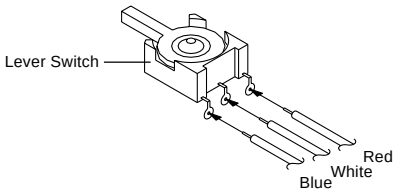


Fig. 2-4-B

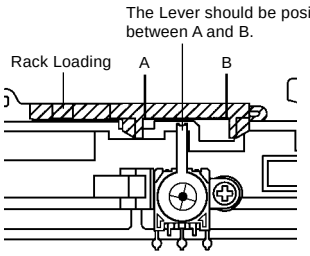


Fig. 2-4-C

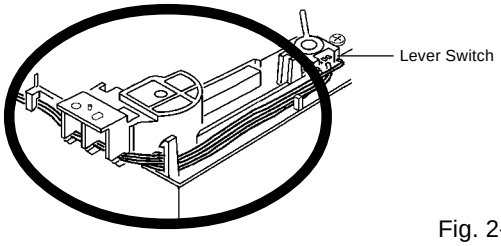


Fig. 2-4-D

2-5: TRAVERSE HOLDER/INSULATOR (F) (Refer to Fig. 2-5-A)

1. Remove the Traverse Holder.
2. Remove the 2 Insulator (F).

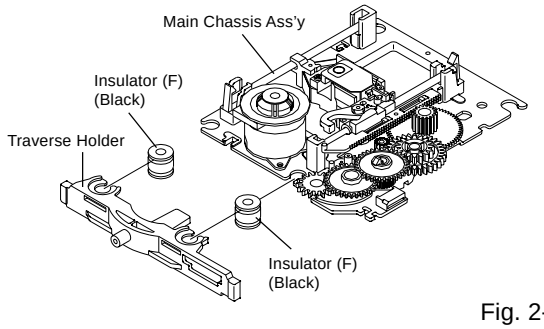


Fig. 2-5-A

NOTE

1. After the installing of the Traverse Holder, check if the wire is like Fig. 2-5-B.

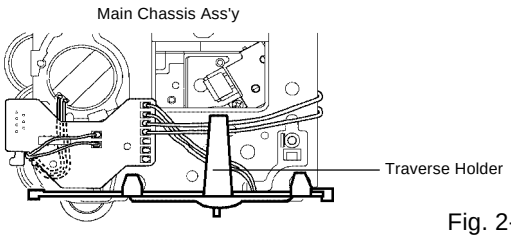


Fig. 2-5-B

2-6: SWITCH PCB ASS'Y (Refer to Fig. 2-6-A)

1. Remove the screw ①.
2. Remove the Switch PCB Ass'y.

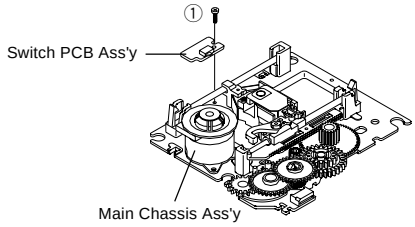


Fig. 2-6-A

NOTE

1. When installing the wire of the Switch PCB, install it correctly as Fig. 2-6-B.

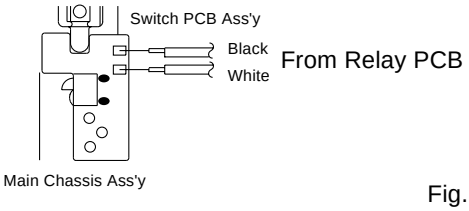


Fig. 2-6-B

2-7: RACK FEED ASS'Y (Refer to Fig. 2-7-A)

1. Remove the screw ①.
2. Remove the Rack Feed 1 Spring, Rack Feed 1/2 and Rack Feed Lever.

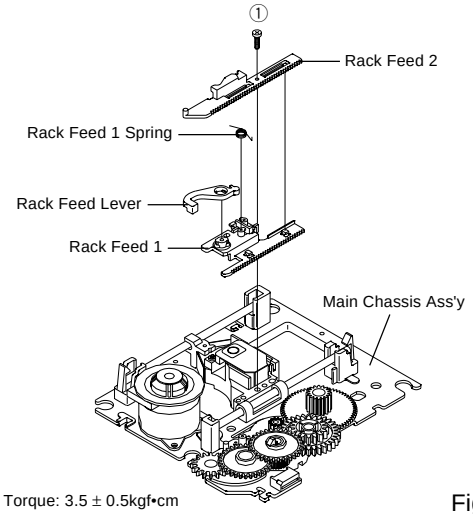


Fig. 2-7-A

DISASSEMBLY INSTRUCTIONS

NOTE

1. After the assembly of the Rack Feed, check if the Rack Feed 1/2 is moving smoothly. **(Refer to Fig. 2-7-B)**
2. In case of the Rack Feed Ass'y installation, install correctly as Fig. 2-7-C.

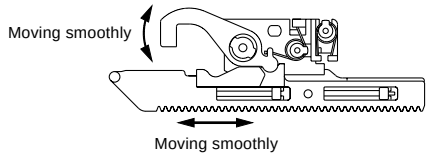


Fig. 2-7-B

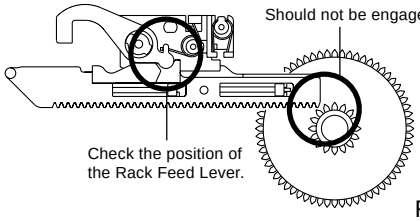


Fig. 2-7-C

2-8: RELAY PCB ASS'Y (Refer to Fig. 2-8-A)

1. Remove the screw ①.
2. Remove the Relay PCB Ass'y.

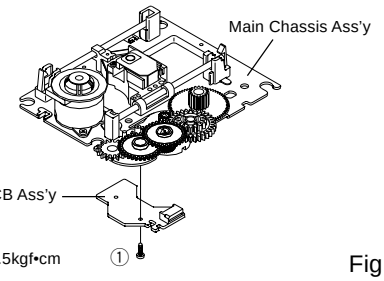


Fig. 2-8-A

NOTE

1. When installing the wire of the Relay PCB, install it correctly as Fig. 2-8-B.

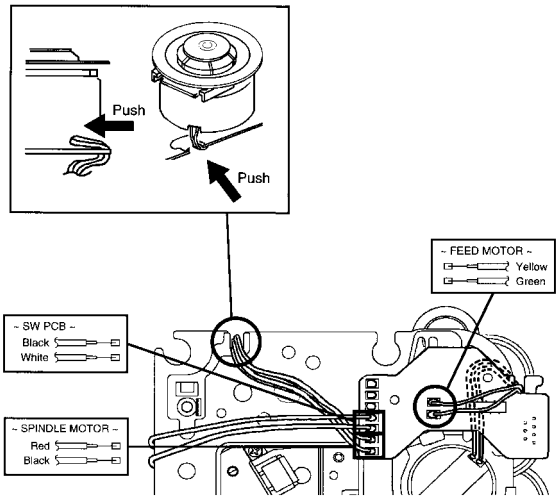


Fig. 2-8-B

2-9: GEAR (Refer to Fig. 2-9-A)

1. Unlock the support ①.
2. Remove the Middle Gear 1/2/3, Idler Gear and Feed Gear.

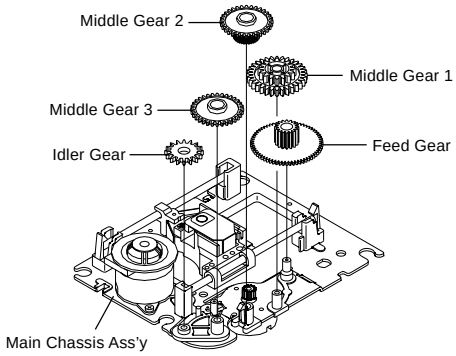


Fig. 2-9-A

NOTE

1. In case of the Idler Gear installation, install correctly as Fig. 2-9-B.
2. When installing the Middle Gear 2, check if the Middle Gear 2 is locked correctly as Fig. 2-9-C.

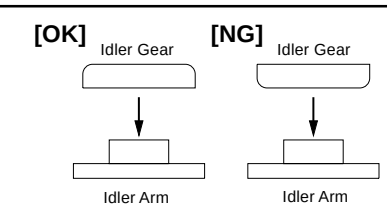


Fig. 2-9-B

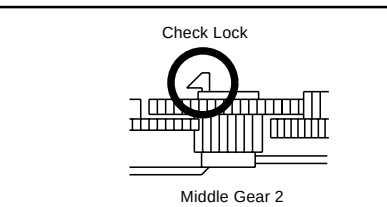


Fig. 2-9-C

2-10: IDLER ARM (Refer to Fig. 2-10)

1. Remove the Idler Arm.

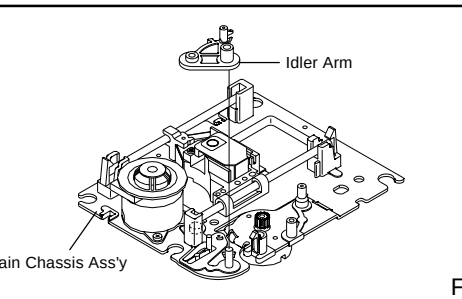
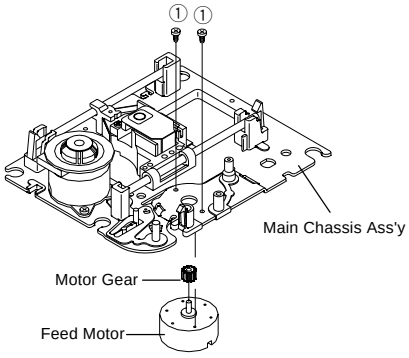


Fig. 2-10

DISASSEMBLY INSTRUCTIONS

2-11: FEED MOTOR (Refer to Fig. 2-11-A)

1. Remove the 2 screws ①.
2. Remove the Feed Motor.
3. Remove the Motor Gear.



• Screw Torque: 1 ± 0.5kgf•cm

Fig. 2-11-A

NOTE

1. In case of the Motor Gear installation, check if the value of the Fig. 2-11-B is correct.
2. When installing the Feed Motor, check if the cable is positioned as Fig. 2-11-C.

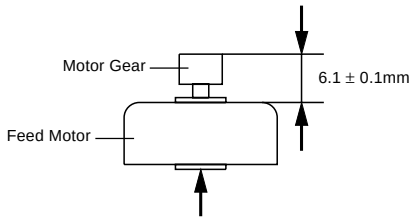


Fig. 2-11-B

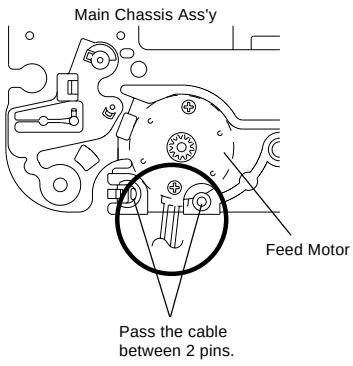


Fig. 2-11-C

DISASSEMBLY INSTRUCTIONS

3. REMOVAL OF ANODE CAP

Read the following **NOTED** items before starting work.

* After turning the power off there might still be a potential voltage that is very dangerous. When removing the Anode Cap, make sure to discharge the Anode Cap's potential voltage.
* Do not use pliers to loosen or tighten the Anode Cap terminal, this may cause the spring to be damaged.

REMOVAL

1. Follow the steps as follows to discharge the Anode Cap. **(Refer to Fig. 3-1.)**
   Connect one end of an Alligator Clip to the metal part of a flat-blade screwdriver and the other end to ground.
   While holding the plastic part of the insulated Screwdriver, touch the support of the Anode with the tip of the Screwdriver.
   A cracking noise will be heard as the voltage is discharged.

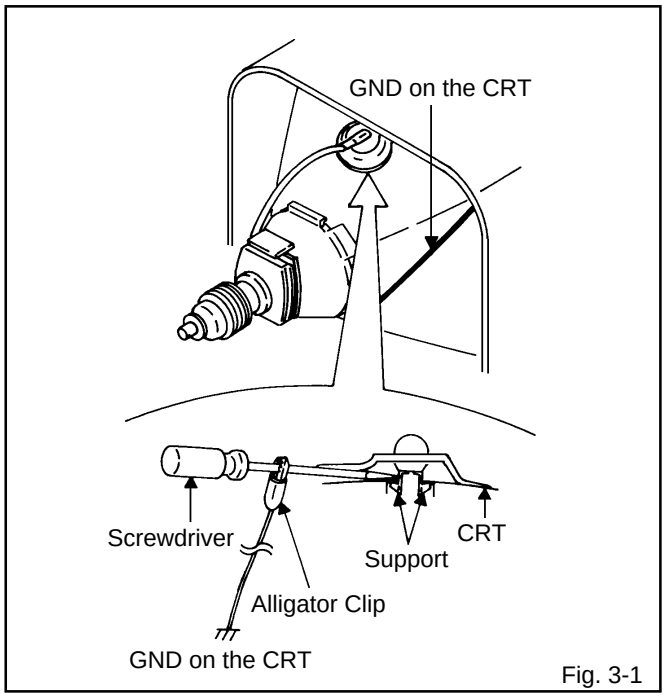


Fig. 3-1

2. Flip up the sides of the Rubber Cap in the direction of the arrow and remove one side of the support. **(Refer to Fig. 3-2.)**

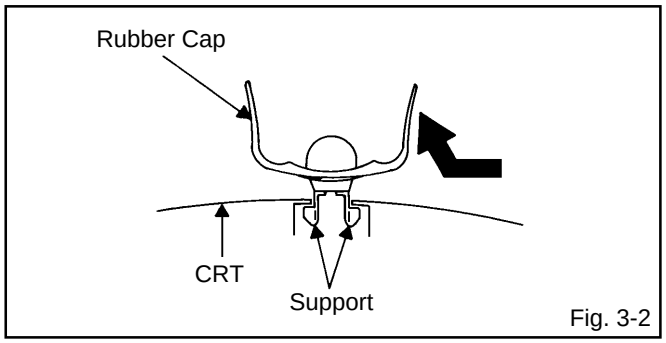


Fig. 3-2

3. After one side is removed, pull in the opposite direction to remove the other.

NOTE

Take care not to damage the Rubber Cap.

INSTALLATION

1. Clean the spot where the cap was located with a small amount of alcohol. **(Refer to Fig. 3-3.)**

NOTE

Confirm that there is no dirt, dust, etc. at the spot where the cap was located.

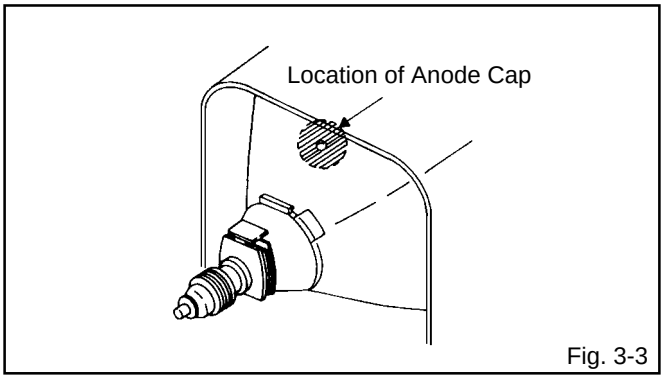


Fig. 3-3

2. Arrange the wire of the Anode Cap and make sure the wire is not twisted.
3. Turn over the Rubber Cap. **(Refer to Fig. 3-4.)**

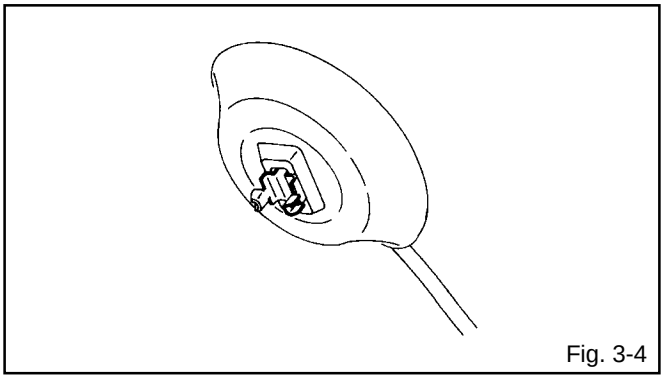


Fig. 3-4

4. Insert one end of the Anode Support into the anode button, then the other as shown in **Fig. 3-5**.

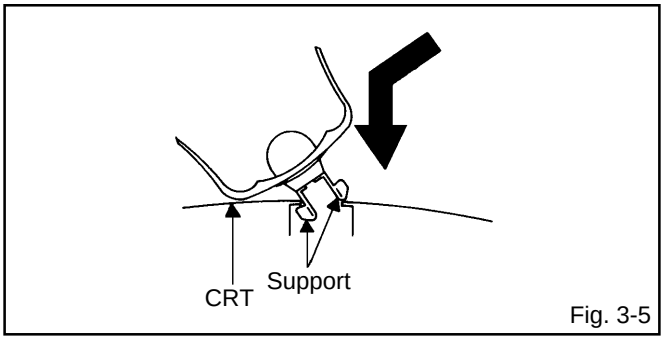


Fig. 3-5

5. Confirm that the Support is securely connected.
6. Put on the Rubber Cap without moving any parts.

DISASSEMBLY INSTRUCTIONS

4. REMOVAL AND INSTALLATION OF FLAT PACKAGE IC

REMOVAL

1. Put the Masking Tape (cotton tape) around the Flat Package IC to protect other parts from any damage. **(Refer to Fig. 4-1.)**

   NOTE

   Masking is carried out on all the parts located within 10 mm distance from IC leads.

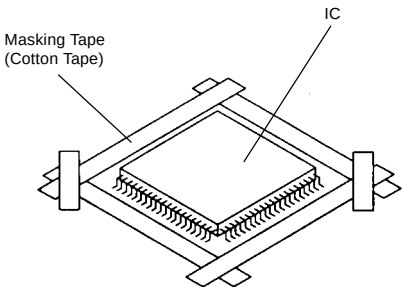


Fig. 4-1

2. Heat the IC leads using a blower type IC desoldering machine. **(Refer to Fig. 4-2.)**

   NOTE

   Do not add the rotating and the back and forth directions force on the IC, until IC can move back and forth easily after desoldering the IC leads completely.

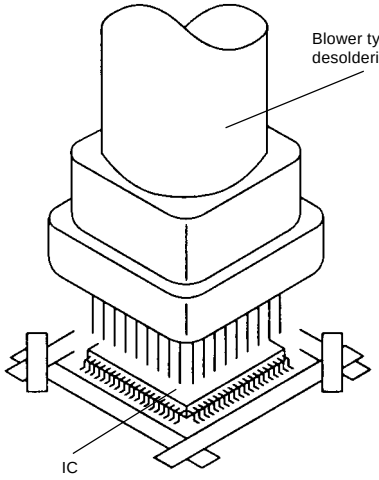


Fig. 4-2

3. When IC starts moving back and forth easily after desoldering completely, pickup the corner of the IC using a tweezers and remove the IC by moving with the IC desoldering machine. **(Refer to Fig. 4-3.)**

   NOTE

   Some ICs on the PCB are affixed with glue, so be careful not to break or damage the foil of each IC leads or solder lands under the IC when removing it.

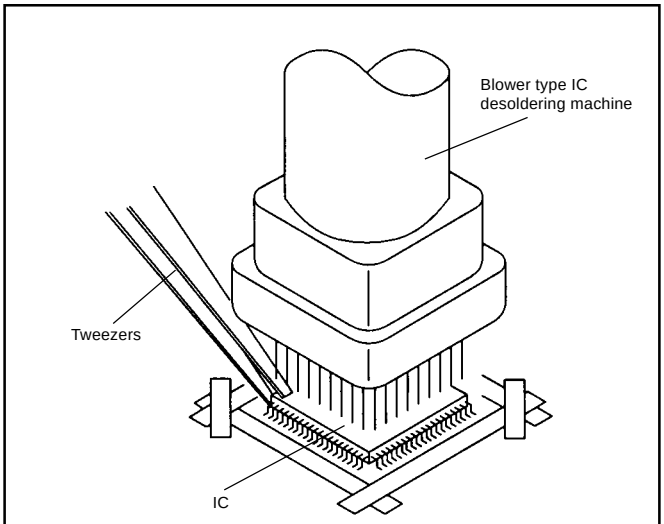


Fig. 4-3

4. Peel off the Masking Tape.
5. Absorb the solder left on the pattern using the Braided Shield Wire. **(Refer to Fig. 4-4.)**

   NOTE

   Do not move the Braided Shield Wire in the vertical direction towards the IC pattern.

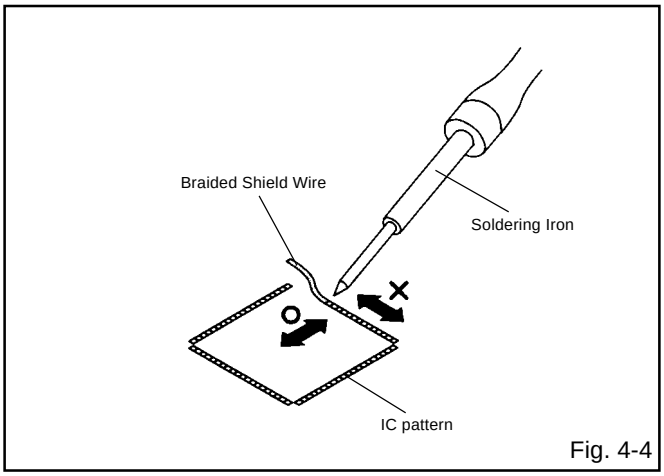


Fig. 4-4

DISASSEMBLY INSTRUCTIONS

INSTALLATION

1. Take care of the polarity of new IC and then install the new IC fitting on the printed circuit pattern. Then solder each lead on the diagonal positions of IC temporarily. **(Refer to Fig. 4-5.)**

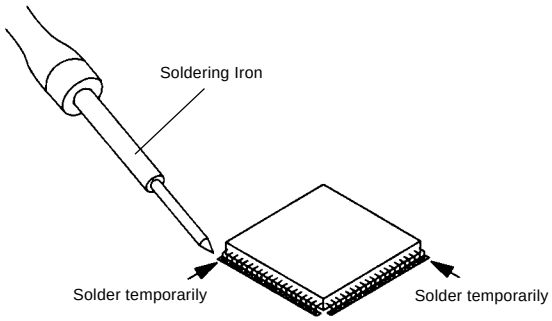


Fig. 4-5

2. Supply the solder from the upper position of IC leads sliding to the lower position of the IC leads. **(Refer to Fig. 4-6.)**

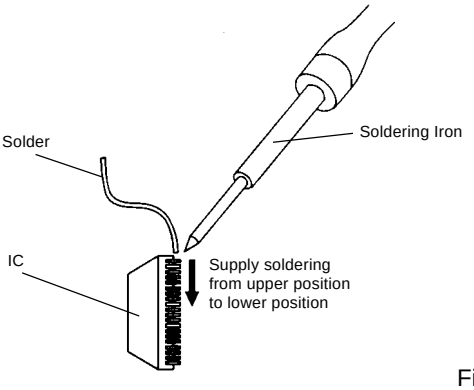


Fig. 4-6

3. Absorb the solder left on the lead using the Braided Shield Wire. **(Refer to Fig. 4-7.)**

   NOTE

   Do not absorb the solder to excess.

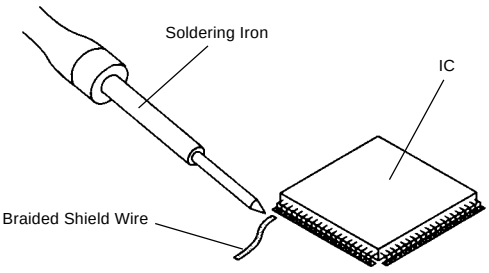


Fig. 4-7

4. When bridge-soldering between terminals and/or the soldering amount are not enough, resolder using a Thin-tip Soldering Iron. **(Refer to Fig. 4-8.)**

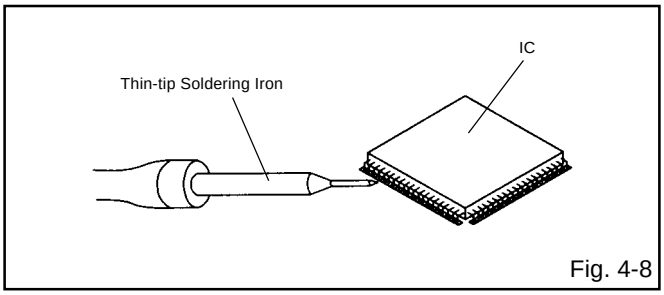


Fig. 4-8

5. Finally, confirm the soldering status on four sides of the IC using a magnifying glass.
   Confirm that no abnormality is found on the soldering position and installation position of the parts around the IC. If some abnormality is found, correct by resoldering.

   NOTE

   When the IC leads are bent during soldering and/or repairing, do not repair the bending of leads. If the bending of leads are repaired, the pattern may be damaged. So, always be sure to replace the IC in this case.

SERVICE MODE LIST

This unit provided with the following SERVICE MODES so you can repair, examine and adjust easily.

To enter to the SERVICE MODE function, press and hold both buttons simultaneously on the main unit and on the remote control for more than a standard time (second).

Set Key	Remocon Key	Standard Time (seconds)	Operations
VOL. (-) MIN	0	1	Releasing of V-CHIP PASSWORD.
VOL. (-) MIN	1	1	Initialization of the factory on TV. NOTE: Do not use this for the normal servicing. If you set a factory initialization, the memories are reset such as the channel setting, and the POWER ON total hours.
VOL. (-) MIN	4	1	Initialization of the factory on DVD. NOTE: Do not use this for the normal servicing. The function will only work without the setting of DVD disc at DVD mode.
VOL. (-) MIN	6	1	POWER ON total hours are displayed on the screen. Refer to the "PREVENTIVE CHECKS AND SERVICE INTERVALS" (CONFIRMATION OF HOURS USED). Can be checked of the INITIAL DATA of MEMORY IC. Refer to the "WHEN REPLACING EEPROM (MEMORY) IC".
VOL. (-) MIN	9	1	Display of the Adjustment MENU on the screen. Refer to the "ELECTRICAL ADJUSTMENT" (On-Screen Display Adjustment).
STOP	7	3	Releasing of PARENTAL LOCK. Refer to the “PARENTAL CONTROL - RATING LEVEL”. NOTE: The function will only work without the setting of DVD disc at DVD mode.
STOP	9	3	Tray cannot be opened. Refer to the “TRAY LOCK”. NOTE: No indications on the screen when the Tray Lock is setting.

CONFIRMATION OF HOURS USED

POWER ON total hours can be checked on the screen. Total hours are displayed in 16 system of notation.

NOTE: If you set a factory initialization, the total hours is reset to "0".

1. Set the VOLUME to minimum.
2. Press both VOL. DOWN button on the set and Channel button **(6)** on the remote control for more than 1 second.
3. After the confirmation of using hours, turn off the power.

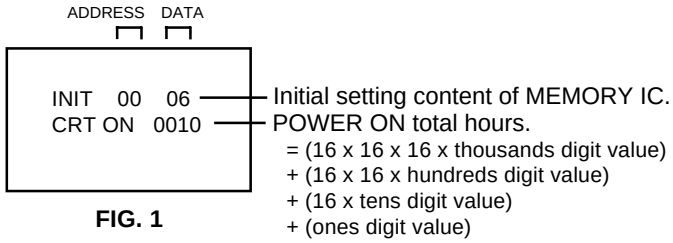

ADDRESS
DATA
INIT 00 06
CRT ON 0010
Initial setting content of MEMORY IC.
POWER ON total hours.
= (16 x 16 x 16 x thousands digit value)
+ (16 x 16 x hundreds digit value)
+ (16 x tens digit value)
+ (ones digit value)

FIG. 1

WHEN REPLACING EEPROM (MEMORY) IC

If a service repair is undertaken where it has been required to change the MEMORY IC, the following steps should be taken to ensure correct data settings while making reference to TABLE 1.

NOTE: No need setting for after INI 27.

INI	+0	+1	+2	+3	+4	+5	+6	+7	+8	+9	+A	+B	+C	+D	+E	+F
00	06	3F	4C	00	D1	05	30	25	15	57	03	00	D8	40	0F	4F
10	30	50	50	AA	45	78	63	50	50	78	52	3A	00	11	00	00
20	80	88	83	88	89	88	FF	FF	---	---	---	---	---	---	---	---

Table 1

1. Enter DATA SET mode by setting VOLUME to minimum.
2. Press both VOL. DOWN button on the set and Channel button **(6)** on the remote control for more than 1 second. ADDRESS and DATA should appear as FIG 1.

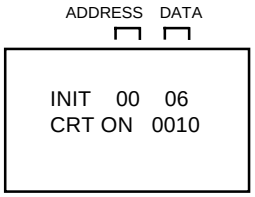


FIG. 1

3. ADDRESS is now selected and should "blink". Using the VOL. UP/DOWN button on the remote, step through the ADDRESS until required ADDRESS to be changed is reached.
4. Press ENTER to select DATA. When DATA is selected, it will "blink".
5. Again, step through the DATA using VOL. UP/DOWN button until required DATA value has been selected.
6. Pressing ENTER will take you back to ADDRESS for further selection if necessary.
7. Repeat steps 3 to 6 until all data has been checked.
8. When satisfied correct DATA has been entered, turn POWER off (return to STANDBY MODE) to finish DATA input.

After the data input, set to the initializing of shipping.

9. Turn POWER on.
10. Press both VOL. DOWN button on the set and Channel button **(1)** on the remote control for more than 1 second.
11. After the finishing of the initializing of shipping, the unit will turn off automatically.

The unit will now have the correct DATA for the new MEMORY IC.

ELECTRICAL ADJUSTMENTS

1. BEFORE MAKING ELECTRICAL ADJUSTMENTS

Read and perform these adjustments when repairing the circuits or replacing electrical parts or PCB assemblies.

CAUTION

- Use an isolation transformer when performing any service on this chassis.
- Before removing the anode cap, discharge electricity because it contains high voltage.
- When removing a PCB or related component, after unfastening or changing a wire, be sure to put the wire back in its original position.
- When you exchange IC and Transistor for a heat sink, apply the silicon grease on the contact section of the heat sink. Before applying new silicon grease, remove all the old silicon grease. (Old grease may cause damages to the IC and Transistor).

Prepare the following measurement tools for electrical adjustments.

1. Oscilloscope
2. Digital Voltmeter
3. AC Voltmeter
4. Pattern Generator
5. Multi-Sound Signal Generator

On-Screen Display Adjustment

1. Set the VOLUME to minimum.
2. Press the VOL. DOWN button on the set and the Channel button **(9)** on the remote control for more than 1 second to appear the adjustment mode on the screen as shown in **Fig. 1-1**.

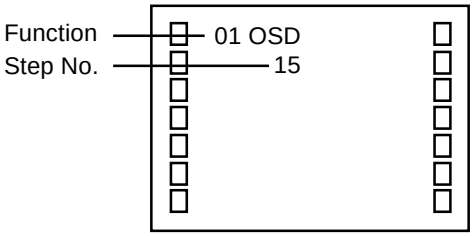


Fig. 1-1

3. Use the Channel UP/DOWN button or Channel button **(1-0)** on the remote control to select the options shown in **Fig. 1-2**.
4. Press the MENU button on the remote control to end the adjustments.

NO.	FUNCTION	NO.	FUNCTION
01	OSD H	35	CONT. AV(MIN)
02	OSD CONTRAST	36	COL. AV(CENT.)
03	CUT OFF	37	COL. AV(MAX)
04	H POSITION	38	COL. AV(MIN)
05	H BLK L	39	TINT AV
06	H BLK R	40	SHARPNESS AV
07	V SIZE	41	SUB BIAS
08	V POSITION	42	BRI. DVD(CENT.)
09	V LINEARITY	43	BRI. DVD(MAX)
10	V S CORRECTION	44	BRI. DVD(MIN)
11	V COMP	45	CONT. DVD(CENT.)
12	R CUT OFF	46	CONT. DVD(MAX)
13	G CUT OFF	47	CONT. DVD(MIN)
14	B CUT OFF	48	COL. DVD(CENT.)
15	R DRIVE	49	COL. DVD(MAX)
16	G DRIVE	50	COL. DVD(MIN)
17	B DRIVE	51	TINT DVD
18	BRIGHTNESS(CENT.)	52	SHARPNESS DVD
19	BRIGHTNESS(MAX)	53	SUB BIAS
20	BRIGHTNESS(MIN)	54	BRI. GAME(CENT.)
21	CONTRAST(CENT.)	55	BRI. GAME(MAX)
22	CONTRAST(MAX)	56	BRI. GAME(MIN)
23	CONTRAST(MIN)	57	CONT. GAME(CENT.)
24	COLOR(CENT.)	58	CONT. GAME(MAX)
25	COLOR(MAX)	59	CONT. GAME(MIN)
26	COLOR(MIN)	60	SUB BIAS
27	TINT	61	TUNING V MUTE
28	SHARPNESS	62	POWER ON V MUTE
29	SUB BIAS	63	INPUT LEVEL
30	BRI. AV(CENT.)	64	SEPARATION L
31	BRI. AV(MAX)	65	SEPARATION H
32	BRI. AV(MIN)	66	X-RAY TEST
33	CONT. AV(CENT.)	67	H STOP
34	CONT. AV(MAX)	68	H FREQ

Fig. 1-2

2. BASIC ADJUSTMENTS

2-1: CONSTANT VOLTAGE

1. Set condition is AV MODE without signal.
2. Using the remote control, set the brightness and contrast to normal position.
3. Connect the digital voltmeter to **TP401**.
4. Adjust the **VR3800** until the digital voltmeter is 114 ± 0.5V.

2-2: FOCUS

1. Receive the monoscope pattern.
2. Turn the Focus Volume fully counterclockwise once.
3. Adjust the **Focus Volume** until picture is distinct.

2-3: CUT OFF

1. Adjust the unit to the following settings.
   R CUT OFF=7F, G CUT OFF=7F, B CUT OFF=7F,
   R DRIVE=3F, G DRIVE=07, B DRIVE=3F
2. Place the set with Aging Test for more than 15 minutes.
3. Set condition is AV MODE without signal.
4. Using the remote control, set the brightness and contrast to normal position.
5. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(03)** on the remote control to select "CUT OFF".
6. Adjust the **Screen Volume** until a dim raster is obtained.

ELECTRICAL ADJUSTMENTS

2-4: WHITE BALANCE

NOTE: Adjust after performing CUT OFF adjustment.

1. Place the set with Aging Test for more than 15 minutes.
2. Receive the gray scale pattern from the Pattern Generator.
3. Using the remote control, set the brightness and contrast to normal position.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(16)** on the remote control to select "G DRIVE".
5. Press the CH. UP/DOWN button on the remote control to select the "R CUT OFF", "G CUT OFF", "B CUT OFF", "R DRIVE" or "B DRIVE".
6. Adjust the VOL. UP/DOWN button on the remote control to whiten the R CUT OFF, G CUT OFF, B CUT OFF, R DRIVE, and B DRIVE at each step tone sections equally.
7. Perform the above adjustments 5 and 6 until the white color is looked like a white.

2-5: HORIZONTAL POSITION

1. Receive the monoscope pattern.
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(04)** on the remote control to select "HPOSI".
4. Press the VOL. UP/DOWN button on the remote control until the SHIFT quantity of the OVER SCAN on right and left becomes minimum.

2-6: VERTICAL POSITION

1. Receive the monoscope pattern.
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(08)** on the remote control to select "VPOSI".
4. Check if the step No. V POSI is "01".
5. Adjust the **VR402** until the horizontal line becomes fit to notch of the shadow mask.

2-7: VERTICAL SIZE

1. Receive the monoscope pattern.
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(07)** on the remote control to select "VSIZE".
4. Press the VOL. UP/DOWN button on the remote control until the Up/Down OVER SCAN Quantity becomes equal to the Right/Left OVER SCAN Quantity.
5. Receive a broadcast and check if the picture is normal.

2-8: VERTICAL LINEARITY

NOTE: Adjust after performing adjustments in section 2-7. After the adjustment of Vertical Linearity, reconfirm the Vertical Position and Vertical Size adjustments.

1. Receive the monoscope pattern.
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(09)** on the remote control to select "VLIN".
4. Press the VOL. UP/DOWN button on the remote control until the SHIFT quantity of the OVER SCAN on upside and downside becomes minimum.

2-9: SEPARATION

Please do the method (1) or method (2) adjustment.

Method (1)

1. Set the multi-sound signal generator for each different L-ch and R-ch frequency (Ex. L-ch=2KHz, R-ch=400Hz) and receive the RF signal.
2. Connect the oscilloscope to the **Audio Out Jack**.
3. Press the AUDIO button on the remote control to set to the stereo mode.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(64)** on the remote control to select “SEPAL”.
5. Press the VOL. UP/DOWN button on the remote control to adjust it until the audio output wave becomes a fine sine wave.
6. Press the CH UP button 1 time to set to "SEPAH" mode.
7. Press the VOL. UP/DOWN button on the remote control to adjust it until the audio output wave becomes a fine sine wave.

Method (2)

1. Set the multi-sound signal generator L-ch=1KHz, R-ch =Non input and receive the RF signal.
2. Connect the oscilloscope to the **Audio Out Jack (R-ch)**.
3. Press the AUDIO button on the remote control to set to the stereo mode.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(64)** on the remote control to select “SEPAL”.
5. Press the VOL. UP/DOWN button on the remote control to adjust it until the R-ch output becomes minimum.
6. Press the CH UP button 1 time to set to "SEPAH" mode.
7. Press the VOL. UP/DOWN button on the remote control to adjust it until the R-ch output becomes minimum.
8. Set the multi-sound signal generator L-ch=Non input, R-ch=1KHz and receive the RF signal.
9. Connect the oscilloscope to the **Audio Out Jack (L-ch)**. Then perform the above adjustments 3~7.

ELECTRICAL ADJUSTMENTS

2-10: OSD HORIZONTAL

1. Activate the adjustment mode display of **Fig. 1-1**.
2. Press the VOL. UP/DOWN button on the remote control until the difference of A and B becomes minimum. **(Refer to Fig. 2-1)**

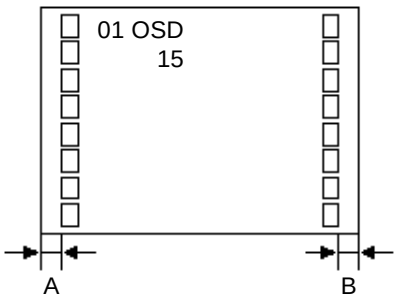


Fig. 2-1

2-11: LEVEL

1. Receive the VHF HIGH (70dB).
2. Connect the AC voltmeter to **pin 6 of CP101**.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(63)** on the remote control to select "LVL".
4. Press the VOL. UP/DOWN button on the remote control until the AC voltmeter is 75 ± 2mV.

2-12: BRIGHT CENTER

1. Receive the monoscope pattern. (RF Input)
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(18)** on the remote control to select "BRTC".
4. Press the VOL. UP/DOWN button on the remote control until the white 15% is starting to be visible
5. Receive the monoscope pattern. (Audio Video Input)
6. Press the INPUT SELECT button on the remote control to set to the AV mode.
7. Using the remote control, set the brightness and contrast to normal position.
8. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(30)** on the remote control to select "BRTCA".
9. Press the VOL. UP/DOWN button on the remote control until the white 15% is starting to be visible
10. Press the TV/DVD button on the remote control to set to the DVD mode.
11. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(42)** on the remote control to select "BRTCD".
12. Press the VOL. UP/DOWN button on the remote control to set the same step numbers as the AV.
13. Press the GAME button on the remote control to set to the GAME mode.
14. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(54)** on the remote control to select "BRTCG".
15. Press the VOL. UP/DOWN button on the remote control to set the same step numbers as the AV.

2-13: TINT CENTER

1. Receive the color bar pattern. (RF Input)
2. Using the remote control, set the brightness, contrast, color and tint to normal position.
3. Connect the oscilloscope to **TP022**.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(27)** on the remote control to select "TNTC".
5. Press the VOL. UP/DOWN button on the remote control until the section "A" becomes a straight line. **(Refer to Fig. 2-2)**
6. Receive the color bar pattern. (Audio Video Input)
7. Press the INPUT SELECT button on the remote control to set to the AV mode.
8. Using the remote control, set the brightness, contrast, color and tint to normal position.
9. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(39)** on the remote control to select "TNTCA".
10. Press the VOL. UP/DOWN button on the remote control until the section "A" becomes a straight line. **(Refer to Fig. 2-2)**
11. Press the TV/DVD button on the remote control to set to the DVD mode.
12. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(51)** on the remote control to select "TNTCD".
13. Press the VOL. UP/DOWN button on the remote control to set the same step numbers as the AV.

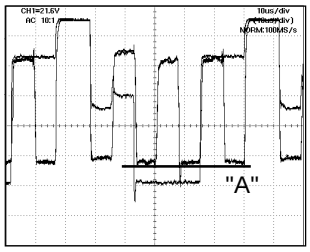


Fig. 2-2

ELECTRICAL ADJUSTMENTS

2-14: COLOR CENTER

1. Receive the color bar pattern. (RF Input)
2. Using the remote control, set the brightness, contrast, color and tint to normal position.
3. Connect the oscilloscope to **TP024**.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(24)** on the remote control to select "COLC".
5. Adjust the VOLTS RANGE VARIABLE knob of the oscilloscope until the range between white 100% and 0% is set to 4 scales on the screen of the oscilloscope.
6. Press the VOL. UP/DOWN button on the remote control until the red color level is adjusted to 100 ± 5% of the white level. **(Refer to Fig. 2-3)**
7. Receive the color bar pattern. (Audio Video Input)
8. Press the INPUT SELECT button on the remote control to set to the AV mode.
9. Using the remote control, set the brightness, contrast, color and tint to normal position.
10. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(36)** on the remote control to select "COLCA".
11. Adjust the VOLTS RANGE VARIABLE knob of the oscilloscope until the range between white 100% and 0% is set to 4 scales on the screen of the oscilloscope.
12. Press the VOL. UP/DOWN button on the remote control until the red color level is adjusted to 100 ± 5% of the white level. **(Refer to Fig. 2-3)**
13. Press the TV/DVD button on the remote control to set to the DVD mode.
14. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(48)** on the remote control to select "COLCD".
15. Press the VOL. UP/DOWN button on the remote control to decrease the step numbers by 8 steps to the AV.

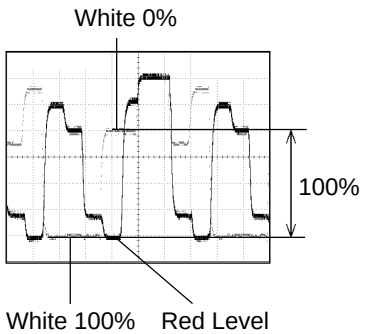


Fig. 2-3

2-15: CONTRAST MAX

1. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(22)** on the remote control to select "CNTX".
2. Press the VOL. UP/DOWN button on the remote control until the contrast step No. becomes "51"
3. Receive a broadcast and check if the picture is normal.
4. Press the INPUT SELECT button on the remote control to set to the AV mode.
5. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(34)** on the remote control to select "CNTXA".
6. Press the VOL. UP/DOWN button on the remote control until the contrast step No. becomes "58"
7. Receive a broadcast and check if the picture is normal.
8. Press the TV/DVD button on the remote control to set to the DVD mode.
9. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(46)** on the remote control to select "CNTXD".
10. Press the VOL. UP/DOWN button on the remote control to set the same step numbers as the AV.
11. Press the GAME button on the remote control to set to the GAME mode.
12. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(58)** on the remote control to select "CNTXG".
13. Press the VOL. UP/DOWN button on the remote control to set the same step numbers as the AV.

2-16: Confirmation of Fixed Value (Step No.)

Please check if the fixed values of the each adjustment items are set correctly referring below.

NO.	FUNCTION	STEP NO.	NO.	FUNCTION	STEP NO.
02	OSD CONTRAST	03	38	COL. AV(MIN)	07
05	H BLK L	00	40	SHARPNESS AV	18
06	H BLK R	02	41	SUB BIAS	50
08	V POSITION	01	43	BRI. DVD(MAX)	4A
10	V S CORRECTION	07	44	BRI. DVD(MIN)	10
11	V COMP	03	45	CONT. DVD(CENT.)	3A
16	G DRIVE	07	47	CONT. DVD(MIN)	05
19	BRIGHTNESS(MAX)	4A	49	COL. DVD(MAX)	7F
20	BRIGHTNESS(MIN)	10	50	COL. DVD(MIN)	07
21	CONTRAST(CENT.)	3A	52	SHARPNESS DVD	10
23	CONTRAST(MIN)	05	53	SUB BIAS	50
25	COLOR(MAX)	7F	55	BRI. GAME(MAX)	4A
26	COLOR(MIN)	07	56	BRI. GAME(MIN)	10
28	SHARPNESS	18	57	CONT. GAME(CENT.)	3A
29	SUB BIAS	50	59	CONT. GAME(MIN)	05
31	BRI. AV(MAX)	4A	60	SUB BIAS	50
32	BRI. AV(MIN)	10	61	TUNING V MUTE	00
33	CONT. AV(CENT.)	3A	62	POWER ON V MUTE	40
35	CONT. AV(MIN)	05	68	H FREQ	3F
37	COL. AV(MAX)	7F			

ELECTRICAL ADJUSTMENTS

3. PURITY AND CONVERGENCE ADJUSTMENTS

NOTE

1. Turn the unit on and let it warm up for at least 30 minutes before performing the following adjustments.
2. Place the CRT surface facing east or west to reduce the terrestrial magnetism.
3. Turn ON the unit and demagnetize with a Degauss Coil.

3-1: STATIC CONVERGENCE (ROUGH ADJUSTMENT)

1. Tighten the screw for the magnet. Refer to the adjusted CRT for the position. **(Refer to Fig. 3-1)**
   If the deflection yoke and magnet are in one body, untighten the screw for the body.
2. Receive the green raster pattern from the color bar generator.
3. Slide the deflection yoke until it touches the funnel side of the CRT.
4. Adjust center of screen to green, with red and blue on the sides, using the pair of purity magnets.
5. Switch the color bar generator from the green raster pattern to the crosshatch pattern.
6. Combine red and blue of the 3 color crosshatch pattern on the center of the screen by adjusting the pair of 4 pole magnets.
7. Combine red/blue (magenta) and green by adjusting the pair of 6 pole magnets.
8. Adjust the crosshatch pattern to change to white by repeating steps 6 and 7.

3-2: PURITY

NOTE

Adjust after performing adjustments in section 3-1.

1. Receive the green raster pattern from color bar generator.
2. Adjust the pair of purity magnets to center the color on the screen.
   Adjust the pair of purity magnets so the color at the ends are equally wide.
3. Move the deflection yoke backward (to neck side) slowly, and stop it at the position when the whole screen is green.
4. Confirm red and blue colors.
5. Adjust the slant of the deflection yoke while watching the screen, then tighten the fixing screw.

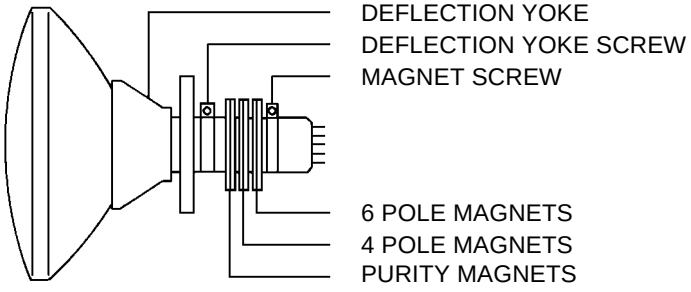


Fig. 3-1

3-3: STATIC CONVERGENCE

NOTE

Adjust after performing adjustments in section 3-2.

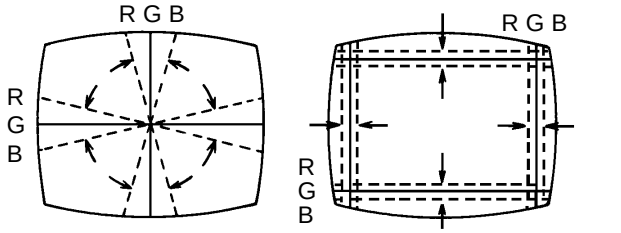
1. Receive the crosshatch pattern from the color bar generator.
2. Combine red and blue of the 3 color crosshatch pattern on the center of the screen by adjusting the pair of 4 pole magnets.
3. Combine red/blue (magenta) and green by adjusting the pair of 6 pole magnets.

3-4: DYNAMIC CONVERGENCE

NOTE

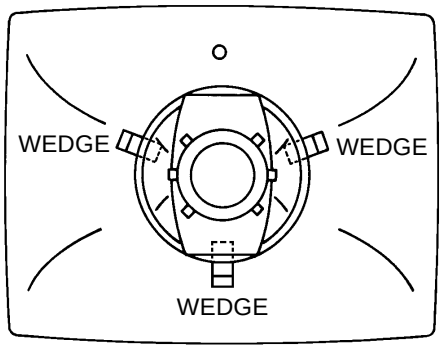
Adjust after performing adjustments in section 3-3.

1. Adjust the differences around the screen by moving the deflection yoke upward/downward and right/left. **(Refer to Fig. 3-2-a)**
2. Insert three wedges between the deflection yoke and CRT funnel to fix the deflection yoke. **(Refer to Fig. 3-2-b)**



UPWARD/DOWNWARD SLANT RIGHT/LEFT SLANT

Fig. 3-2-a

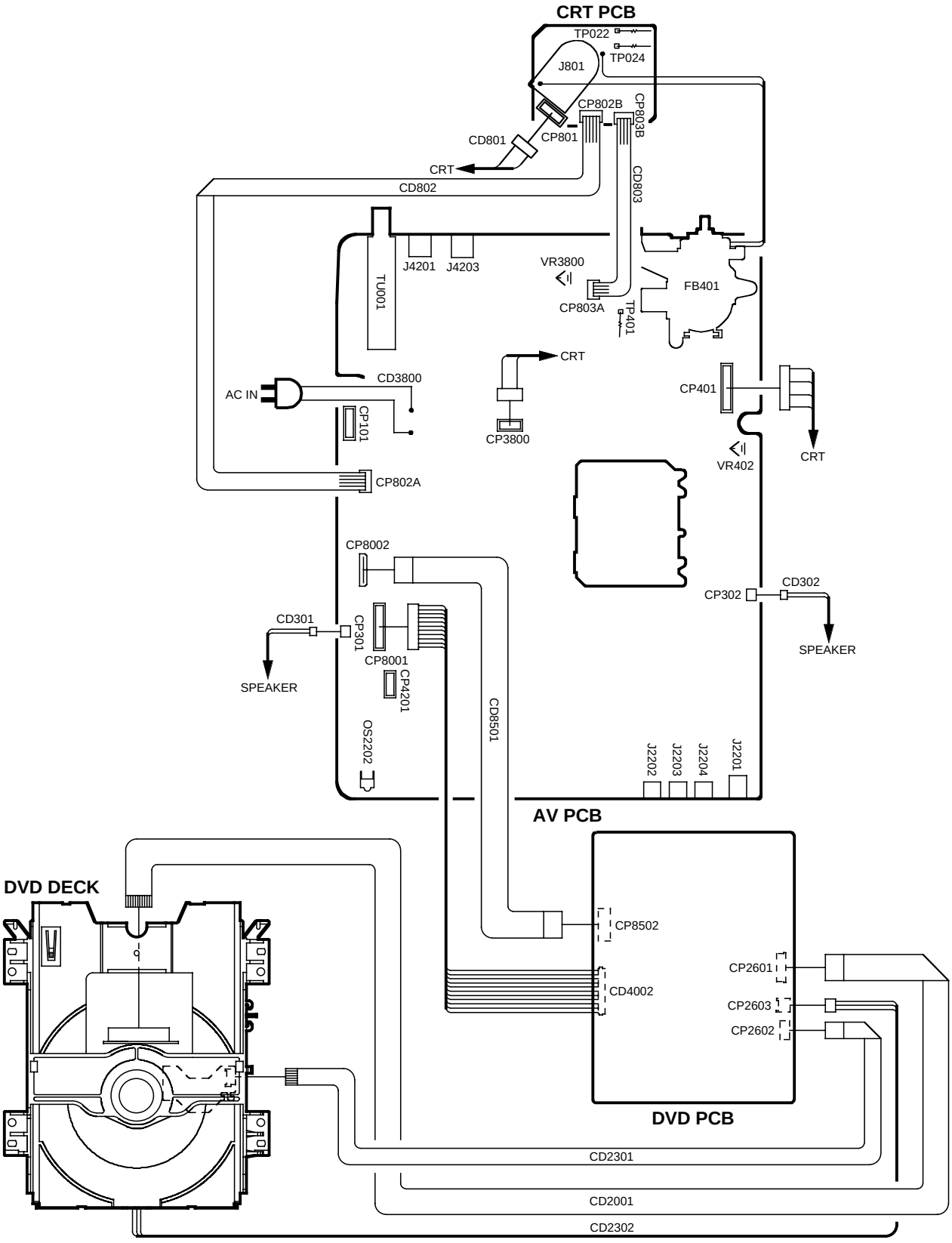


WEDGE POSITION

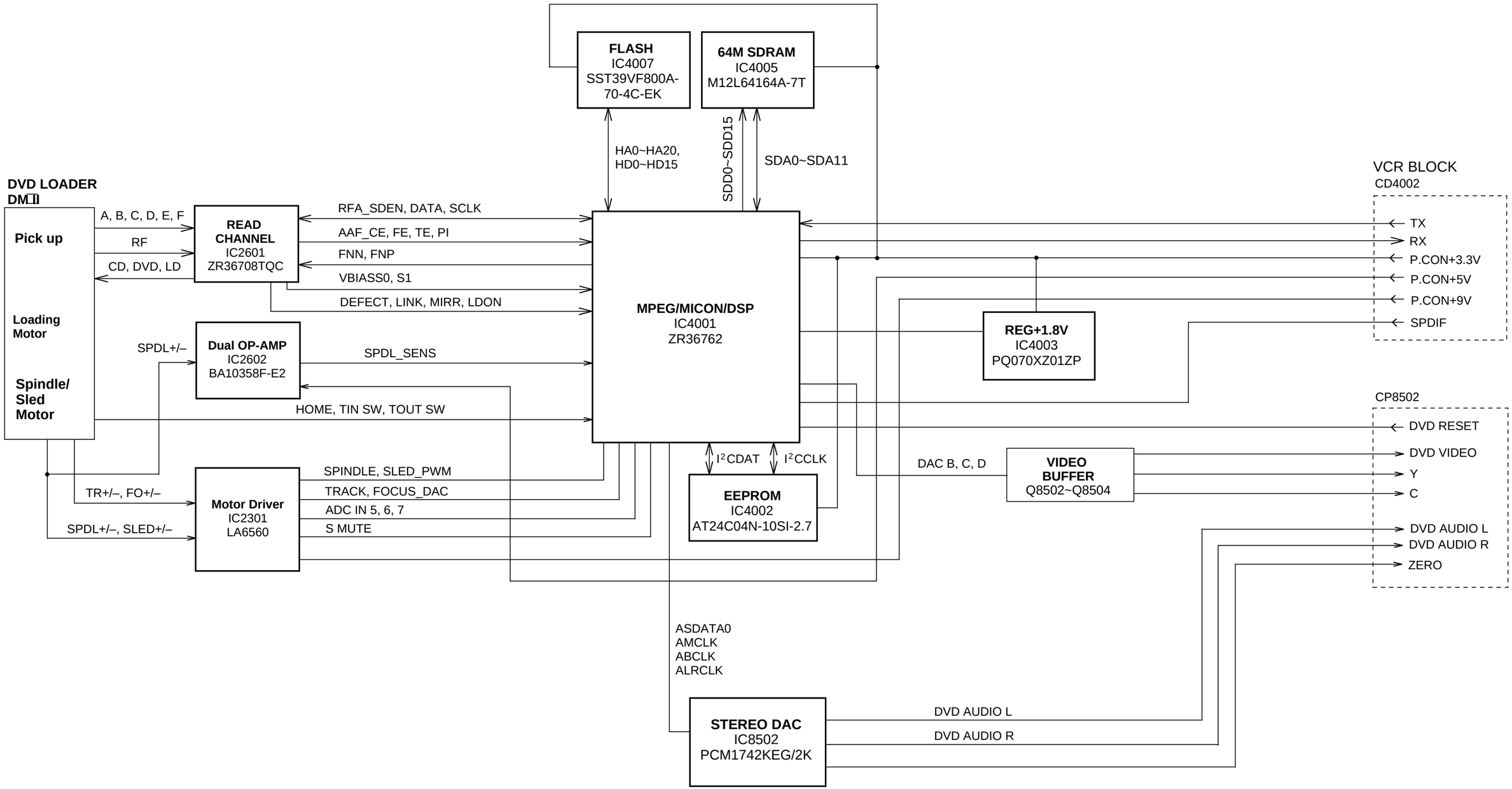
Fig. 3-2-b

ELECTRICAL ADJUSTMENTS

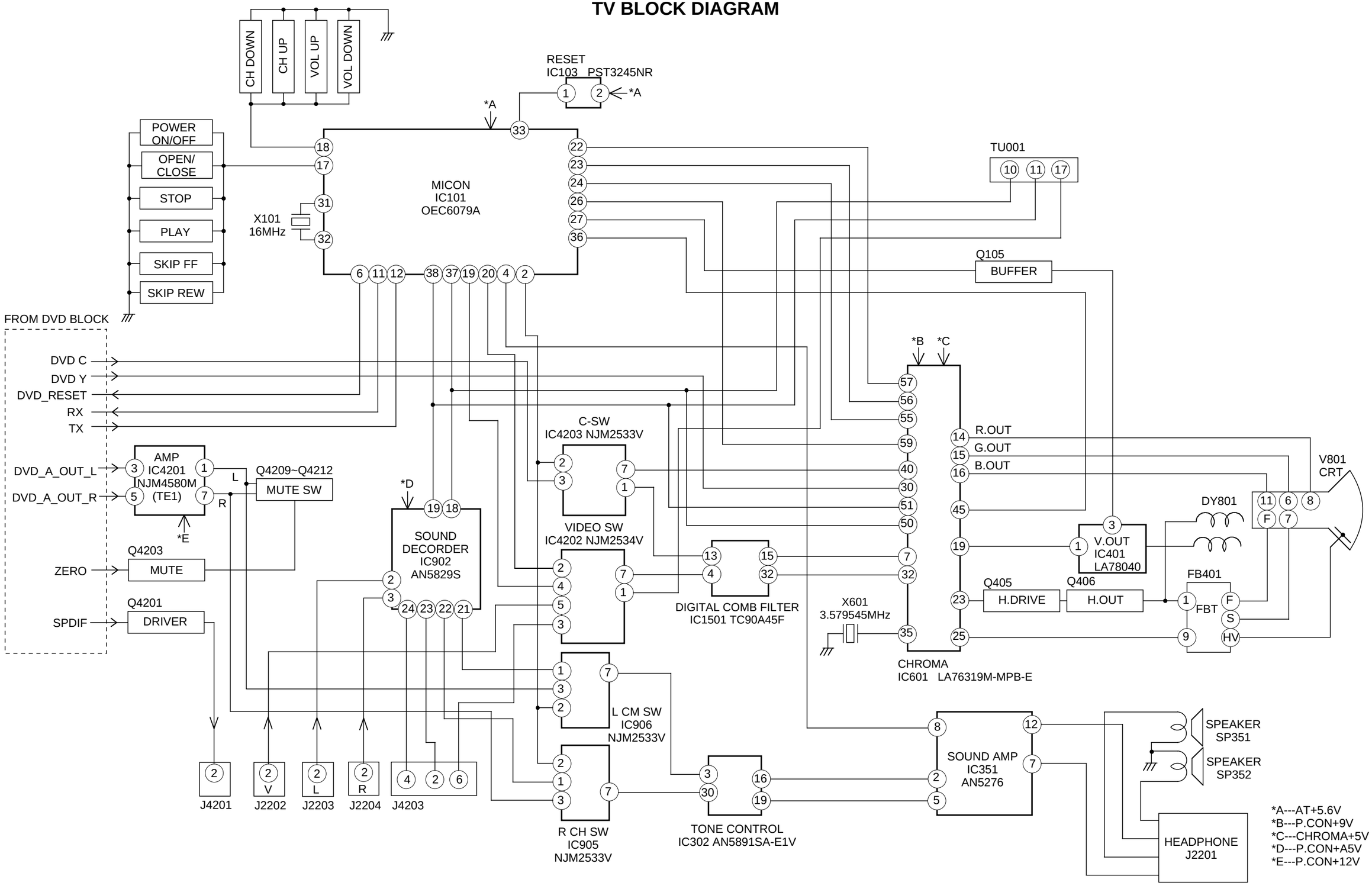
4. ELECTRICAL ADJUSTMENT PARTS LOCATION GUIDE (WIRING CONNECTION)



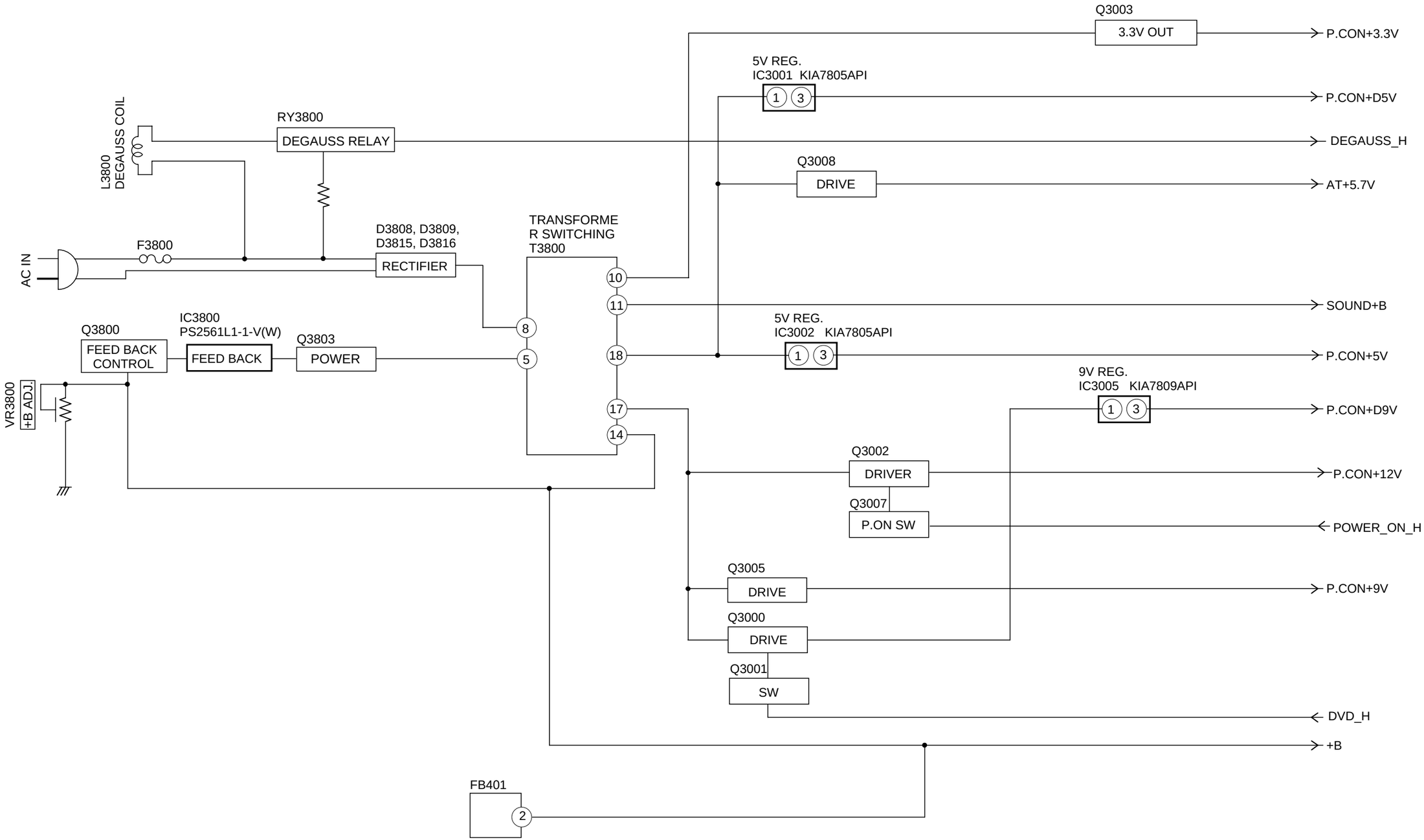
DVD BLOCK DIAGRAM



TV BLOCK DIAGRAM

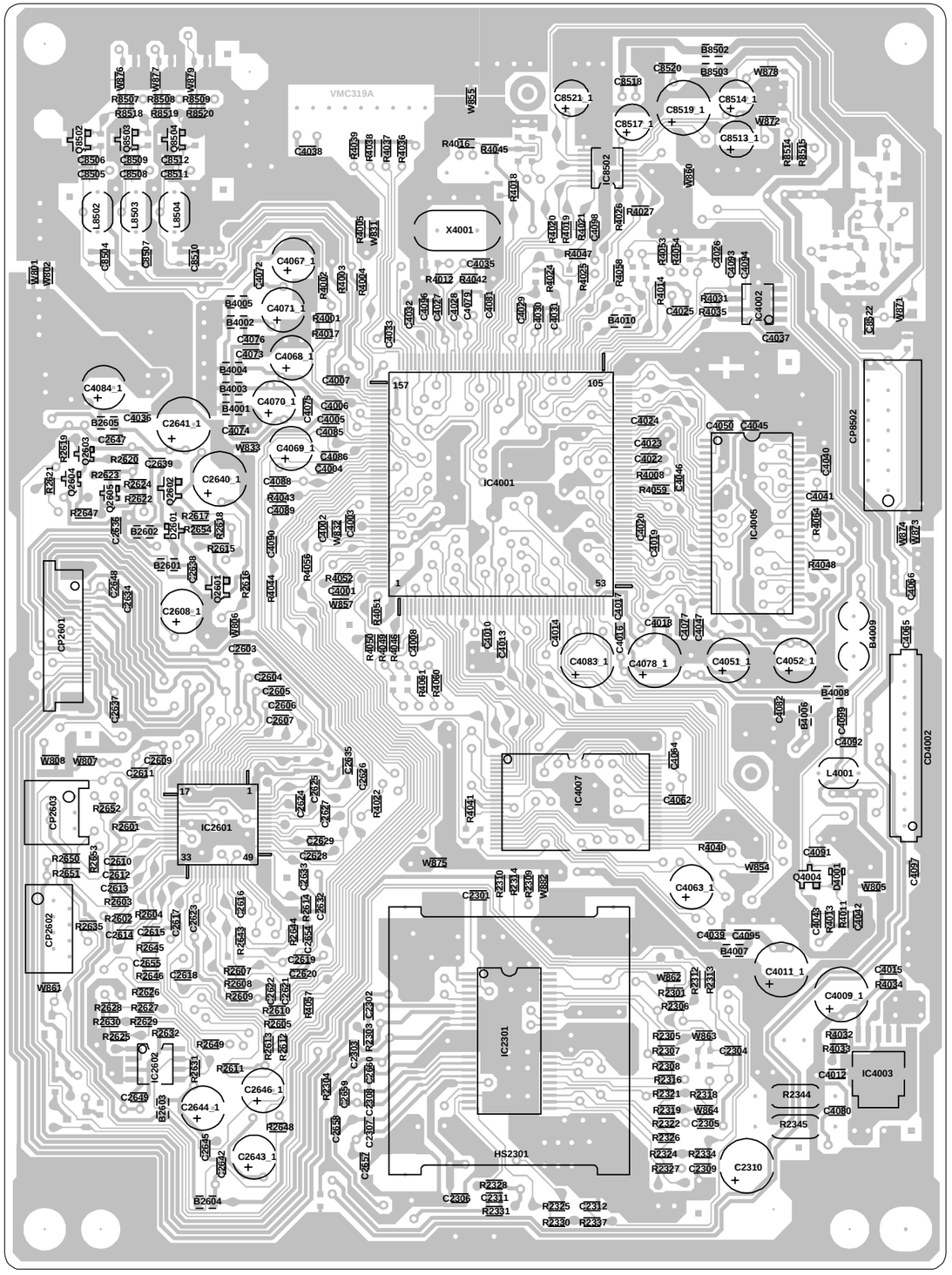


POWER BLOCK DIAGRAM

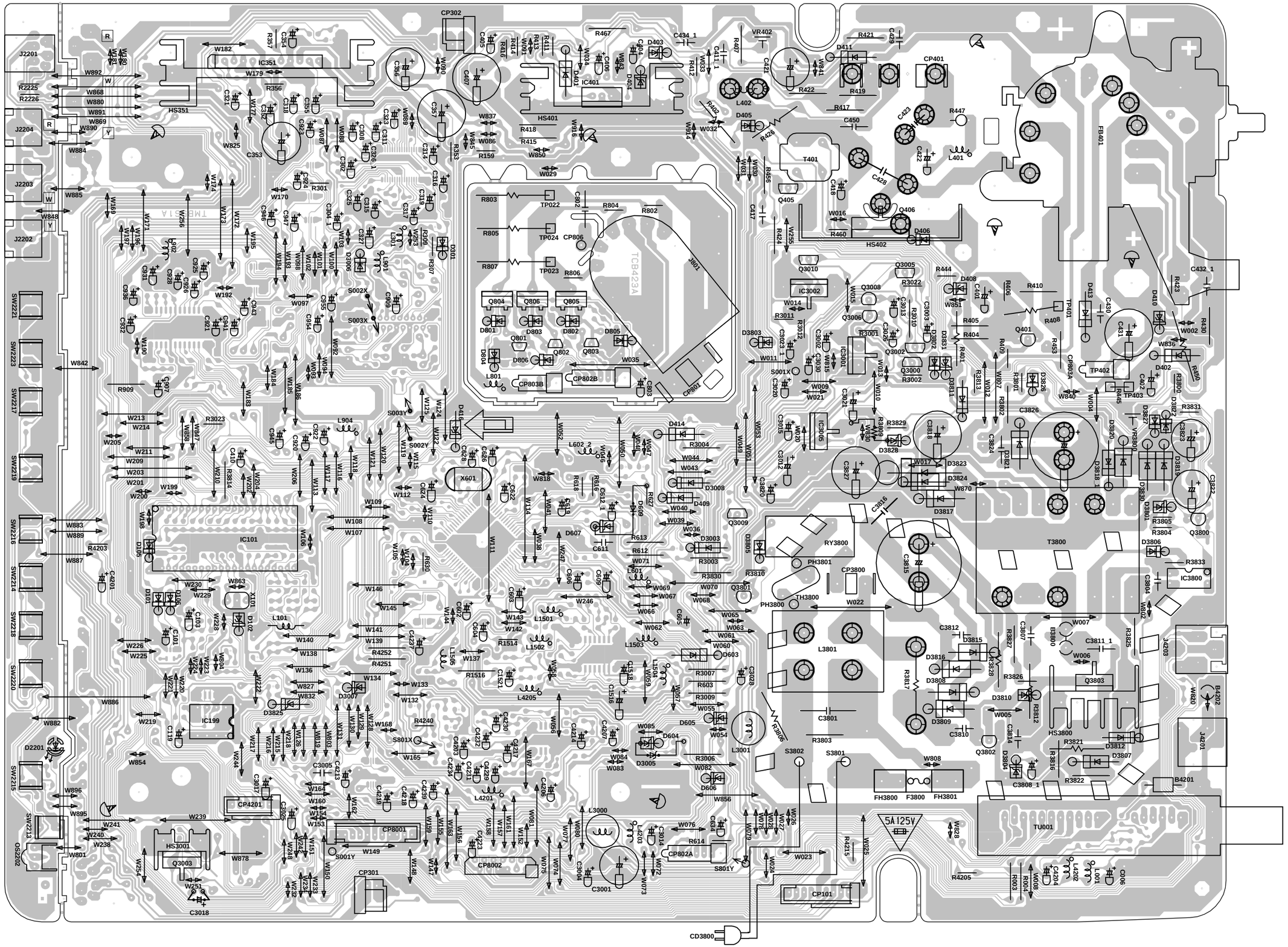


PRINTED CIRCUIT BOARDS

DVD (TOP SIDE)



PRINTED CIRCUIT BOARDS
AV/CRT (INSERTED PARTS)
SOLDER SIDE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J2203
J2202
SW2221
SW2223
SW2219
SW2216
SW2214
SW2218
SW2220
SW2215
SW2213
SW2217
OS2202
IC351
HS351
IC101
IC199
HS401
IC401
HS402
T401
L402
L401
FB401
CP401
RY3800
PH3801
CP3800
PH3800
TH3800
T3800
L3801
L3001
TU001
5A125V
HS3800
HS3001
Q3003
CP4201
CP8001
CP8002
CP301
CP802A
CP802B
CP803B
CP803A
CP101
CD3800
TP401
TP402
TP403
S3802
S3801
FH3800
F3800
FH3801
J801
TCB423A
S002X
S003X
S003Y
S002Y
S801X
S001X
S001Y
X601
X100
IC3002
IC3001
IC3005
Q3010
Q3005
Q3008
Q3006
Q3002
Q3000
Q401
Q3009
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Q3803
Q3802
Q405
Q406
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Q801
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Q802
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D3005
D3008
D3003
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D3825
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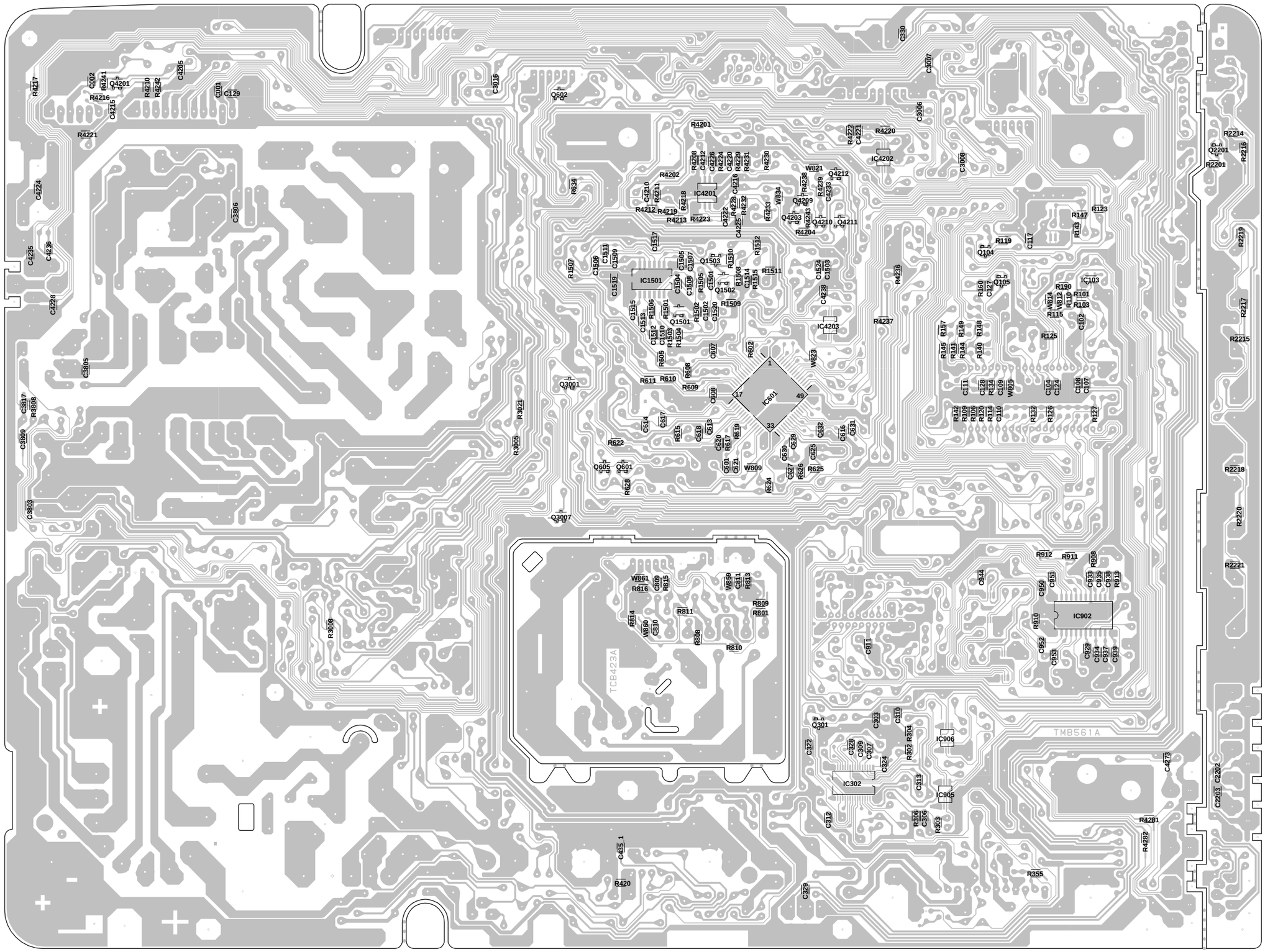
R4290
R4291

PRINTED CIRCUIT BOARDS
AV/CRT (CHIP MOUNTED PARTS)
SOLDER SIDE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IC4203
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IC902
IC302
IC906
IC905
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Q3007
Q301
Q1501
Q1502
Q4201
Q4203
Q4212
Q4210
Q4211
Q105
Q104
Q605
Q601
Q3001
W861
W821
W834
W809
W823
W814
W812
C330
C3007
C3006
C3009
C4224
C3806
C4236
C4235
C4228
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C3817
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C3809
C3803
R3009
R3021
R3006
C4205
C129
C001
C002
R4217
R4241
R4216
R4215
R4210
R4242
R4221
C3016
R4201
R4202
R4212
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R4213
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R4204
R4222
C4221
R4220
R4238
R4239
R4237
R4236
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R2201
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R2221
R2229
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R4282
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C329
R420
C435
R3606
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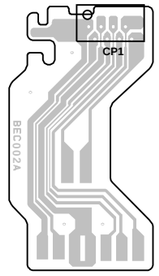
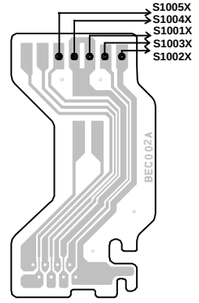
R950
R951
R952

PRINTED CIRCUIT BOARDS

RELAY (INSERTED PARS)
SOLDER SIDE



RELAY (CHIP MOUNTED PARS)
SOLDER SIDE



SW
SOLDER SIDE

MPEG/MICON SCHEMATIC DIAGRAM

(DVD PCB)

MPEG/MICON/DSP IC
IC4001
ZR36762

FROM/TO MEMORY

FROM/TO AUDIO/VIDEO

FROM/TO RF AMP/DSP

FROM/TO REGLATOR1

NOTE:THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE 。

DIGITAL AUDIO SIGNAL(PB)

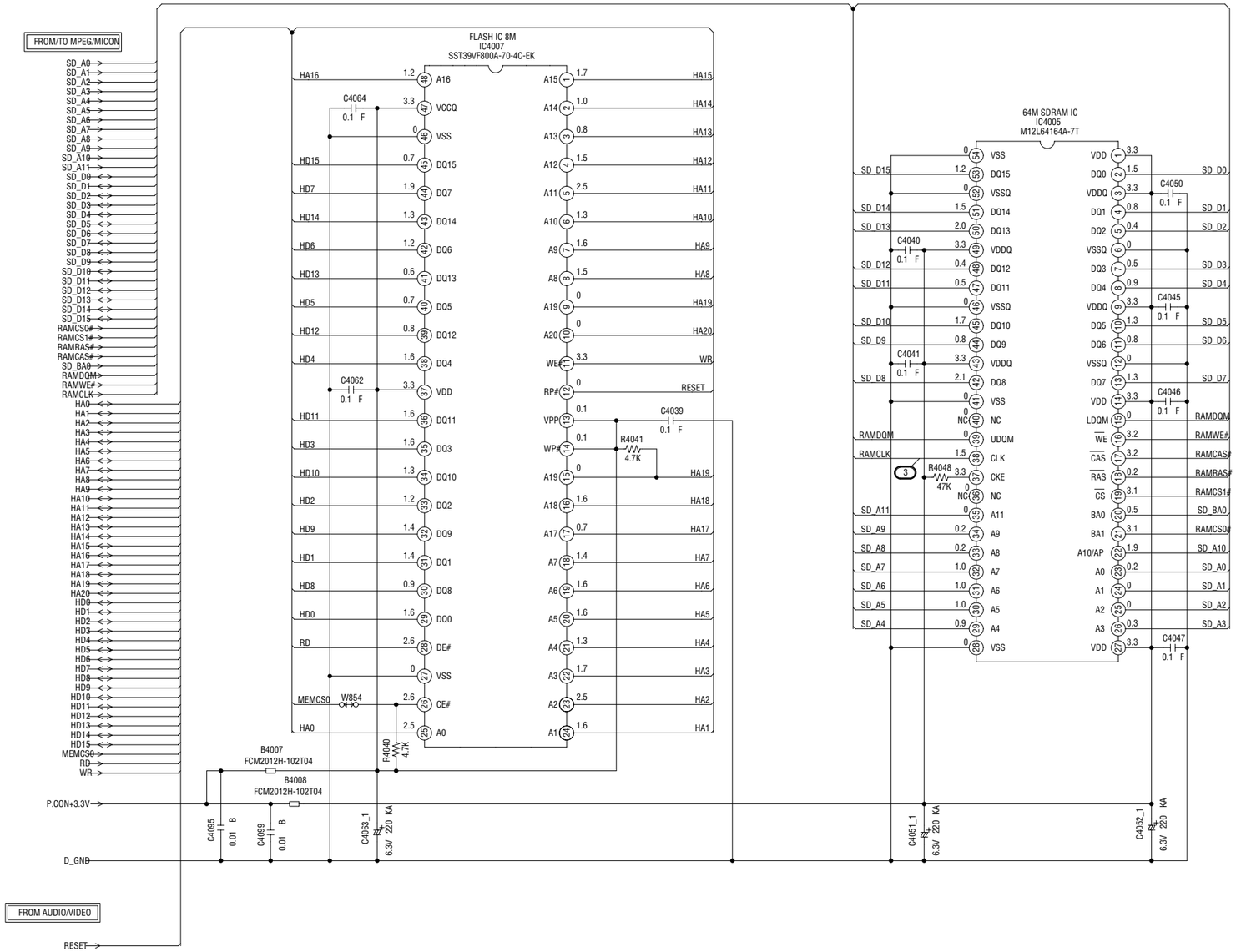
PCB130
VMC319

G-1

G-2

MEMORY SCHEMATIC DIAGRAM

(DVD PCB)



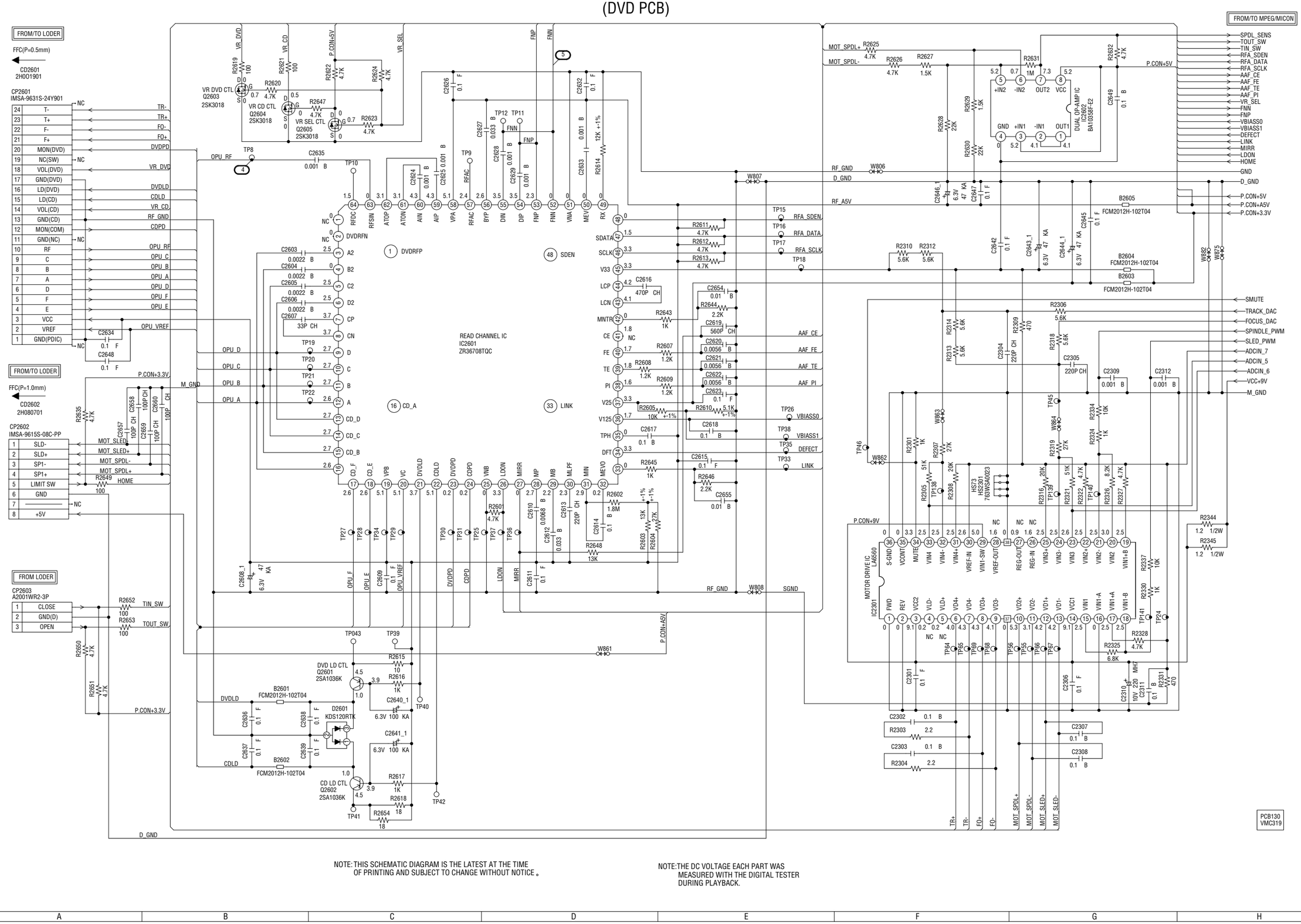
NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE。

NOTE: THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

PCB130
VMC319

RF AMP/DSP SCHEMATIC DIAGRAM

(DVD PCB)

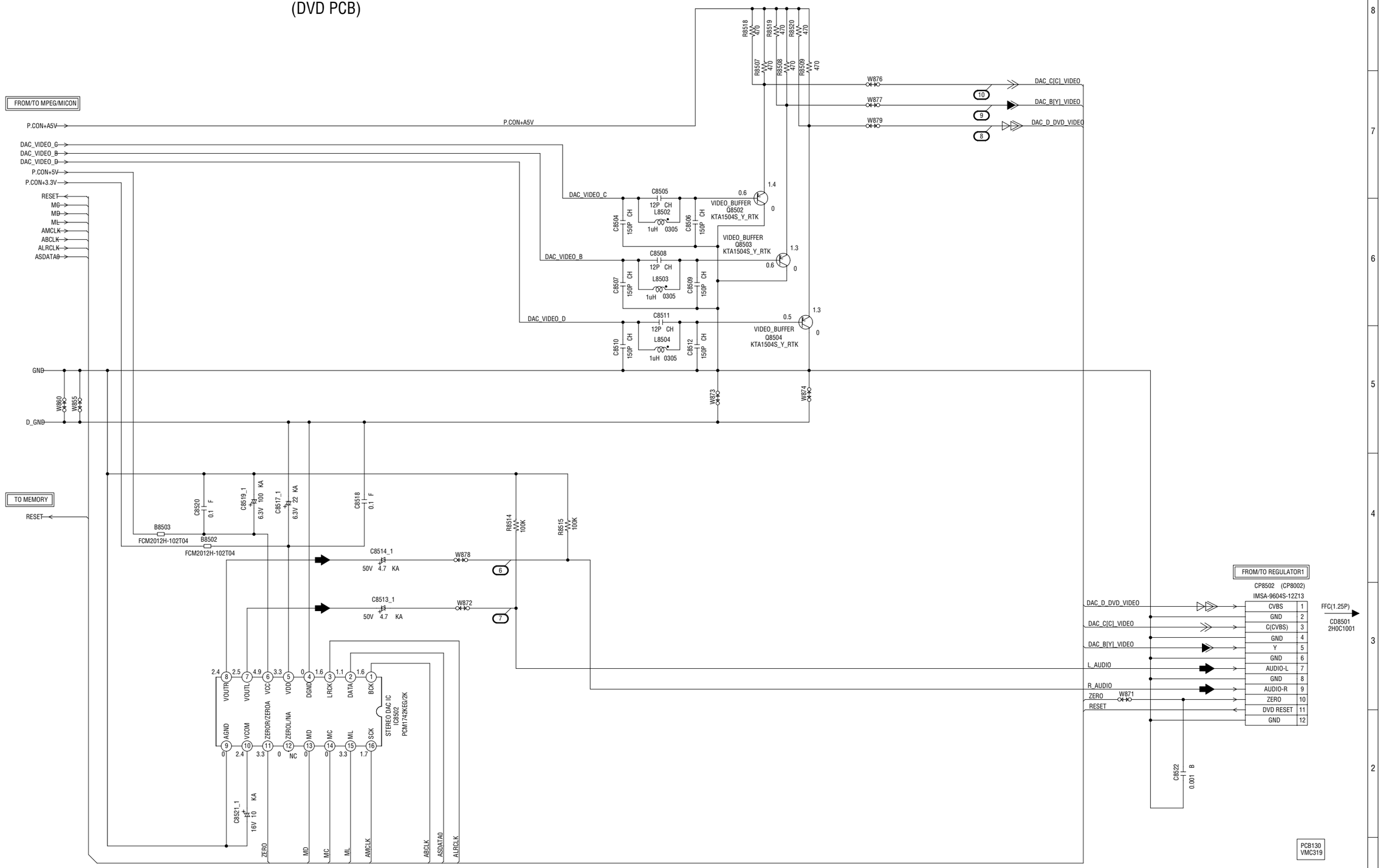


NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE 。

NOTE: THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

AUDIO/VIDEO SCHEMATIC DIAGRAM

(DVD PCB)



◁ PLAYBACK COLOR SIGNAL
◀ PLAYBACK LUMINANCE SIGNAL
◁◁ PLAYBACK VIDEO SIGNAL
◀ AUDIO SIGNAL(PB)
◀◀ DIGITAL AUDIO SIGNAL(PB)

◀◀ R.SIGNAL+ COMPONENT SIGNAL(U)
≪ B.SIGNAL+ COMPONENT SIGNAL(V)

NOTE: THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE。

REGULATOR1 SCHEMATIC DIAGRAM

(AV PCB)

FROM POWER

GND
UNREG+12V
UNREG+8V
UNREG+5V
GND_A

5V REG IC
IC3001 KIA7805API
IN GND OUT
8.1 0 5.0

9V REG IC
IC3005 KIA7809API
IN GND OUT
12.3 0 9.1

L3000 10uH TSL0808

C3004 6.3V 220 YK
W815
C3015 6.3V 100 YK
C3002 16V 10 KA
C3026 16V 10 KA
R3001 100 1/4W
C3001 16V1000 YK
C3016 0.1 F
W820
C3012 16V 470 YK
L3001 22uH
C3021 16V470 YK

DRIVER Q3006 KTC3203_Y
7.9 8.0 10.8

DRIVER Q3002 KTA1281_Y
8.0 7.3
R3008 10K 0.6
R3004 1K 1/4W
P.ON SW Q3007 DTC114EKA
4.0 0
C3017 16V220 YK

DRIVER Q3009 KTA1281_Y
8.0 8.0 7.2
R3005 1M
R3021 1K
D3003 1SS133

R3006 220 1/2W
3.3V OUT Q3003 KTC4369
3.9 3.2 3.4
HS3001 763WSA0018

C3018 50V 1 YK
D3005 MTZJ3.9B
W878
C3025 6.3V 330 YK

D3006 11EQS04N

DRIVER Q3008 KTC3203_Y
8.0 5.0 3.6
D3008 11EQS04N
R3009 100 1/4W
C3028 16V 10 KA
C3013 6.3V 100 YK

AT5.7VREG

DRIVER Q3005 KTC3209_Y
11.9 9.0 9.6
R3010 33 1/2W
P.CON+9V

DRIVER Q3000 KTA1281_Y
13.1 12.6
R3002 10K 1/4W 12.8
R3002 1K 1/4W

DRIVER Q3001 KTC3875S_Y_RTK 12.8
R3023 2.2K 1/4W 5.1
0

R3007 100 1/4W
C3023_1 16V 10 KA
C3030 16V 100 YK

8.5VREG

5V_REG IC
IC3002 KIA7805API
IN GND OUT
8.1 0 4.9

DRIVER Q3010 KTC3209_Y
8.6 9.0 9.4
R3022 100 1/4W
C3003 50V 10 MHE
R3011 220 1/4W
R3012 15 1/4W
C3020 6.3V 100 YK
C3014 6.3V 100 YK

P.CON+12V

FROM/TO MPEG/MICON

CP8001 (CD4002)
A2001WV2-11P

1	GND
2	GND
3	TX
4	RX
5	GND(M)
6	P.CON+9V
7	P.CON+5V
8	P.CON+3.3V
9	P.CON+3.3V
10	GND
11	SPDIF

W819 TX
W803 RX
C3006 470P CH
C3005 56P CH
C3008 470P CH
P.CON+5V_A
C3007 0.1 B
SPDIF-134

S001X
S001Y
W854 NC
W856 NC

FROM/TO AUDIO/VIDEO

CP8002 (CP8502)
IMSA-9604S-12Z14

12	CVBS
11	GND
10	C(CVBS)
9	GND
8	Y(G)
7	GND
6	AUDIO-L
5	GND
4	AUDIO-R
3	ZERO
2	DVD RESET
1	GND

C4223 50V1 KA
DVD_VIDEO
DVD_C
DVD_Y
DVD_A_OUT_L
DVD_A_OUT_R
ZERO
DVD_RESET
D3007 MTZJ5.6B

CD8002
2H0C1001

TO SOUND AMP
GND
P.CON+9V
P.CON+12V
AT+5.6V

TO STEREO
P.CON+5V
P.CON+9V
GND
P.CON+12V

FROM/TO VIF/SIF/CHROMA
8.5VREG
AT5.7VREG
DVD_Y
DVD_C
P.CON+5V
P.CON+9V
GND

TO DEFLECTION
P.CON+5V
GND

FROM/TO MICON/TUNER
GND
POWER_ON_H
DVD_RESET
RX
TX
P.CON+5V
AT+5.6V
DVD_H

TO IN/OUT
P.CON+9V
AT+5.6V
P.CON+5V
P.CON+12V
P.CON+5V_A
SPDIF-134
DVD_A_OUT_L
DVD_A_OUT_R
ZERO
DVD_VIDEO
GND

DIGITAL AUDIO SIGNAL(PB)
AUDIO SIGNAL(PB)
PLAYBACK LUMINANCE SIGNAL
PLAYBACK COLOR SIGNAL

PCB250
TMB561

CAUTION: DIGITAL TRANSISTOR

NOTE:THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

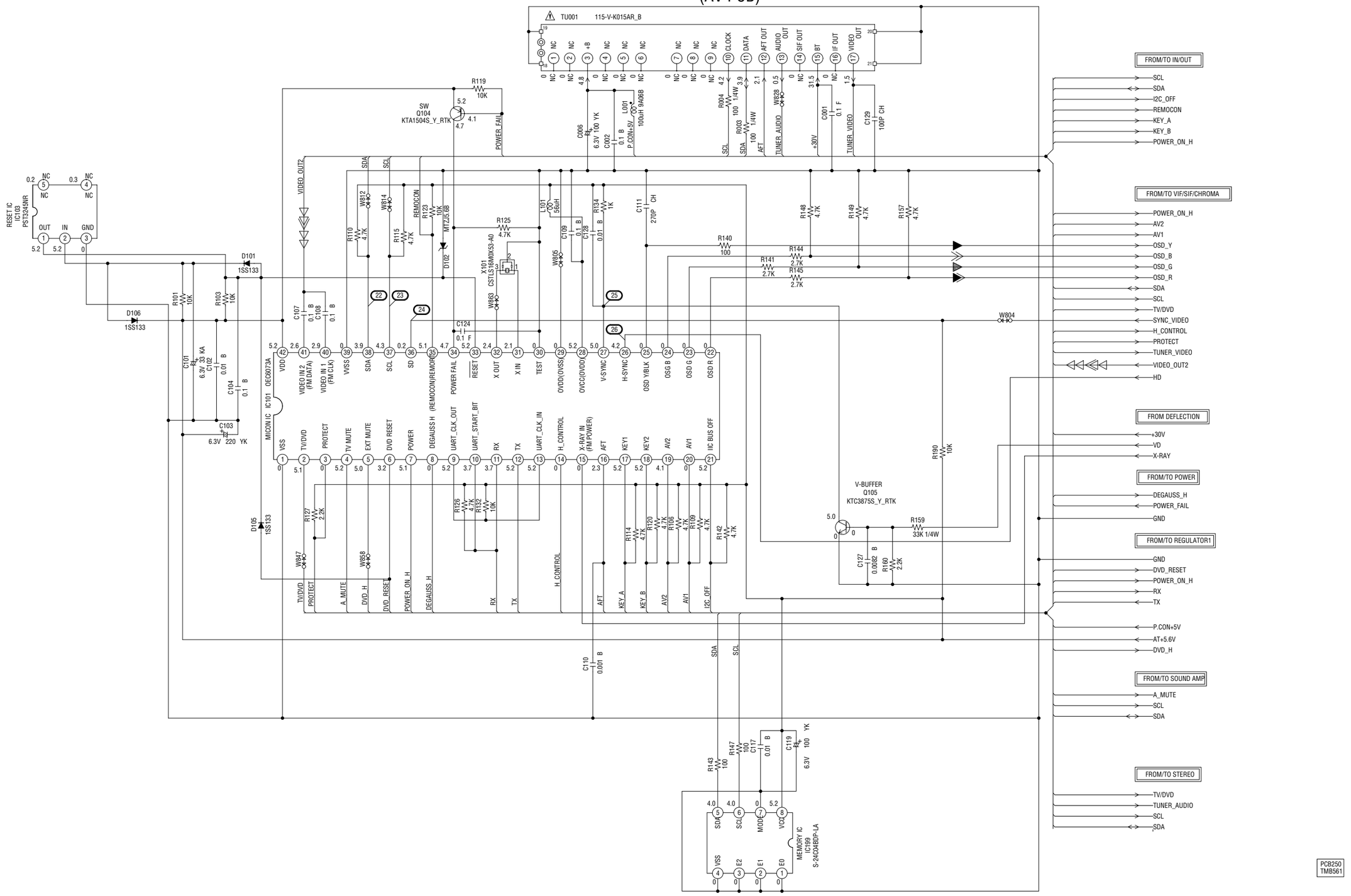
NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE 。

CAUTION SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY,USE ONES DESCRIBED IN PARTS LIST ONLY 。

ATTENTION: LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES。

MICON/TUNER SCHEMATIC DIAGRAM

(AV PCB)



CAUTION SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY,USE ONES DESCRIBED IN PARTS LIST ONLY 。

ATTENTION :LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES。

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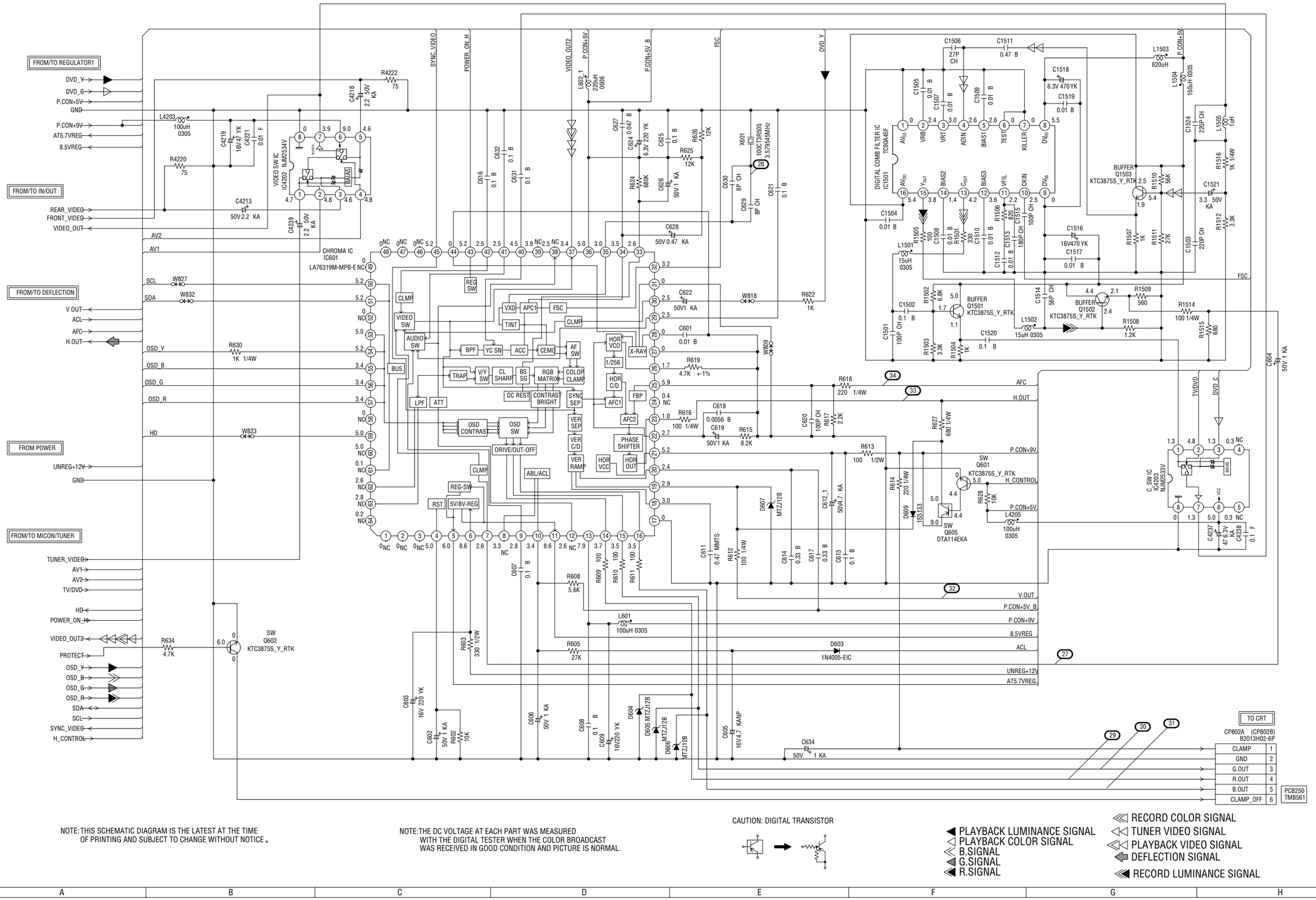
≪ B.SIGNAL
◀ G.SIGNAL
◀ R.SIGNAL
◀ PLAYBACK LUMINANCE SIGNAL

◁◁ TUNER VIDEO SIGNAL
◁◁ PLAYBACK VIDEO SIGNAL

VIF/SIF/CHROMA SCHEMATIC DIAGRAM

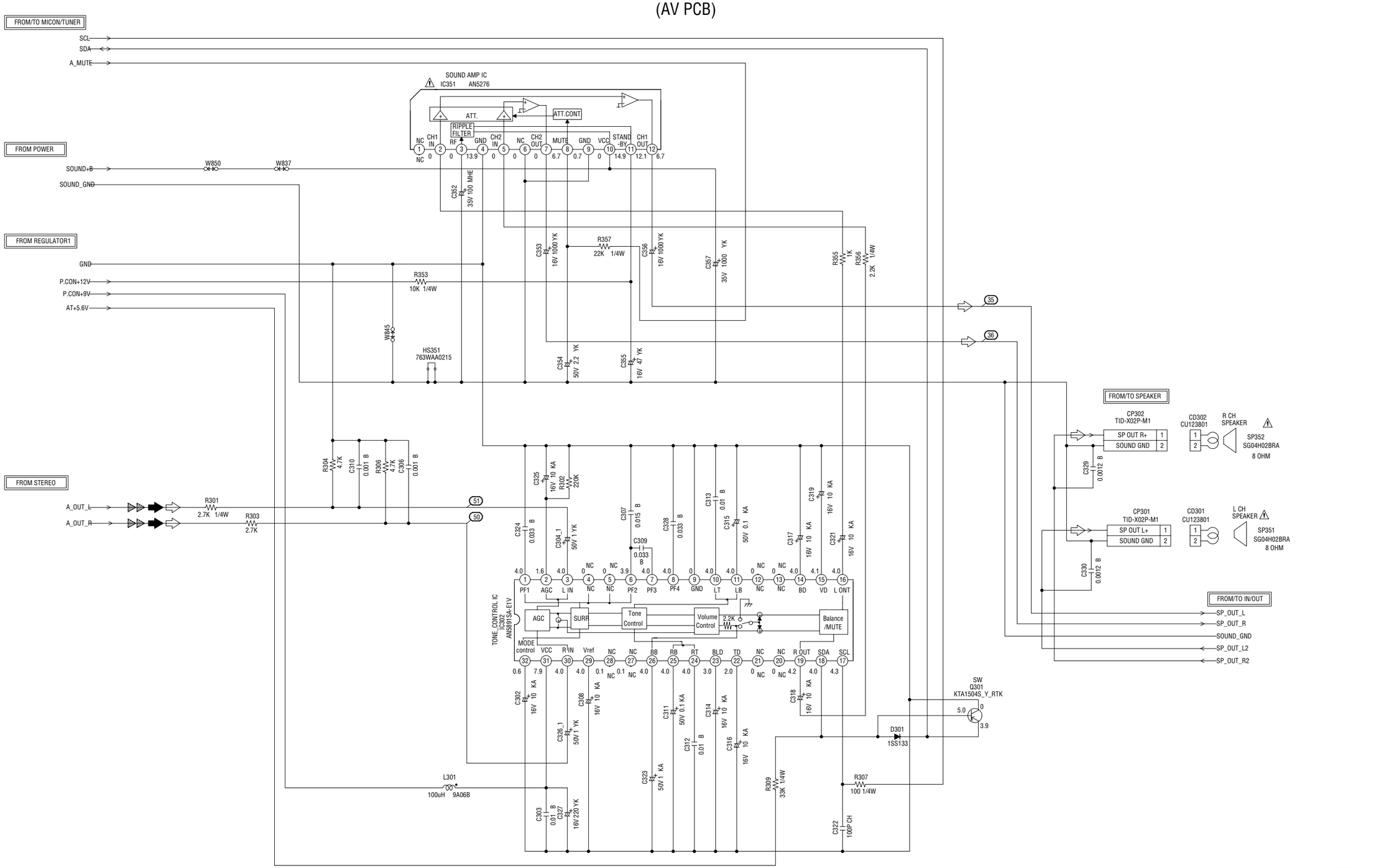
(AV PCB)



NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE。

NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

SOUND AMP SCHEMATIC DIAGRAM
(AV PCB)



NOTE:THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE。

CAUTION SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY,USE ONES DESCRIBED IN PARTS LIST ONLY 。

ATTENTION: LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES。

⇦ AUDIO SIGNAL
⬅ AUDIO SIGNAL(PB)
⇚ TUNER AUDIO SIGNAL

IN/OUT SCHEMATIC DIAGRAM
(AV PCB)

FROM/TO STEREO
AOUDIO_OUT_L
AUDIO_OUT_R
DVD_AUDIO_L
DVD_AUDIO_R
FRONT_A_IN_L
FRONT_A_IN_R
REAR_A_IN_L
REAR_A_IN_R

FROM/TO VIF/SIF/CHROMA
REAR_VIDEO
FRONT_VIDEO
VIDEO_OUT

FROM/TO REGULATOR
P.CON+5V_A
P.CON+5V
SPDIF-134
AT+5.6V
P.CON+12V

DVD_A_OUT_L
DVD_A_OUT_R
ZERO
P.CON+9V
GND
DVD_VIDEO

FROM/TO MICON/TUNER
KEY_A
KEY_B
POWER_ON_H
SCL
SDA
REMOCON
I2C_OFF

FROM/TO SOUND AMP
SP_OUT_L
SP_OUT_R
SOUND_GND
SP_OUT_L2
SP_OUT_R2

L4202 100uH 0305
L4201 100uH 0305
R4241 1.5K
R4205 2.2K 1/4W
C4204 6.3V 100 YK
C4205 0.022 B
R4242 3.3K
R4210 220
D AUDIO DRIVER Q4201 KTC3875S_Y_RTK
R4216 68
C4215 0.1 B
B4201 W5RH3.5X5X1.0
COAXIAL J4201 MSP-251V-05PBSN
C4224 100P CH
R4221 100K
B4202 W5RH3.5X5X1.0
W820
C4273 150P CH
S801Y
S801X
R4204 4.7K
R4243 10K
MUTE DET Q4203 KRC104SRTK
C4203 16V 100 YK
C4233 220P CH
C4217 16V 100 YK
C4220 0.0015 B
R4229 12K
C4229 50V 2.2 KA
C4226 100P CH
R4230 1K
R4208 10K
R4224 10K
R4231 10K
C4216 0.1 B
C4231 16V 22 KA
W821
DVD AUDIO L
DVD AUDIO R
A_GND
AMP IC IC4201 NJM4580M
VCC
R4251 100 1/4W
MUTE SW. Q4210 DTA143EKA
R4238 3.3K
MUTE SW Q4212 KTC3875S Y_RTK
MUTE SW. Q4209 DTC124EKA
R4239 1K
R4201 10K
C4206 50V 2.2 KA
R4211 100K
C4212 820P CH
R4218 1K
C4232 16V 22 KA
W834
R4202 10K
C4207 50V 2.2 KA
R4212 100K
C4222 0.0015 B
R4223 10K
R4213 10K
R4232 10K
R4233 1K
R4252 100 1/4W
R4240 1K 1/4W
MUTE SW Q4211 KTC3875S_Y_RTK
C4210 820P CH
R4219 1K
C4214 10V 33 KA
C4225 100P CH
R4228 12K
C4230 50V 2.2 KA
R4236 10K
R4237 10K
C4234 50V 4.7 KA
37
38
39

AT+5.6V
W896
D2201 LTL-1CHEE-002A
R2201 220
OS2202 PIC-37243SR
Vout
B+
GND
POWER_ON_H
W895
5.0
SW Q2201 DTC124EKA
SOUND_GND
W825
REMOCON
W882
W886
AT+5.6V
R4203 100 1/4W
C4201 16V 47 KA
W887
W801
W842
W848
GND
KEY_A
W883
KEY_B
W889
FRONT_A_IN_R
FRONT_A_IN_L
R4281 100
R4282 100
W884
W890
FRONT_VIDEO
W885
W891
SP_OUT_R2
SP_OUT_R
SP_OUT_L
SP_OUT_L2
W868
W880
W892
W869
R2214 820
R2216 1K
R2218 1.5K
R2220 2.7K
R2221 5.6K
POWER ON/OFF SW2213 EVQ21506R
OPEN/CLOSE SW2215 EVQ21506R
STOP SW2217 EVQ21506R
PLAY SW2219 EVQ21506R
SKIP FF SW2221 EVQ21506R
SKIP REW SW2223 EVQ21506R
CH DOWN SW2214 EVQ21505R
CH UP SW2216 EVQ21505R
VOL UP SW2218 EVQ21505R
VOL DOWN SW2220 EVQ21505R
R2215 820
R2217 1K
R2219 1.5K
R2225 330 1/4W
R2226 330 1/4W
C2202 470P CH
C2203 470P CH
FRONT VIDEO JACK J2202 HTJ-032-05AY
FRONT AUDIO JACK J2203 HTJ-032-05AW
FRONT AUDIO JACK J2204 HTJ-032-05AR
NC
YELLOW
WHITE
RED
HEADPHONE_JACK J2201 MSJ-2000
P.CON+9V
REAR_A_IN_L
REAR_A_IN_R
REAR_VIDEO
DVD_VIDEO
I2C_OFF
SDA
SCL
R4217 100
R4215 100 1/4W
C4228 0.0056 B
C4235 0.0056 B
C4236 100P CH
REAR A/V JACK(STEREO) J4203 MSP-213V2-432_PBSN

TEST POINT
CP101 A2001WV2-9P
GND 1
I2C SCL 2
I2C SDA 3
I2C OFF 4
P.CON+9V 5
AUDIO OUT L 6
AUDIO OUT R 7
DVD_VIDEO 8
VIDEO OUT 9

TEST POINT
CP4201 A2001WV2-6P
DVD_VIDEO 1
GND 2
DVD_AUDIO_L 3
GND 4
DVD_AUDIO_R 5
P.CON+12V 6

PCB250 TMB561

CAUTION: DIGITAL TRANSISTOR
CAUTION: DIGITAL TRANSISTOR

NOTE:THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE 。

ATTENTION:LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES。

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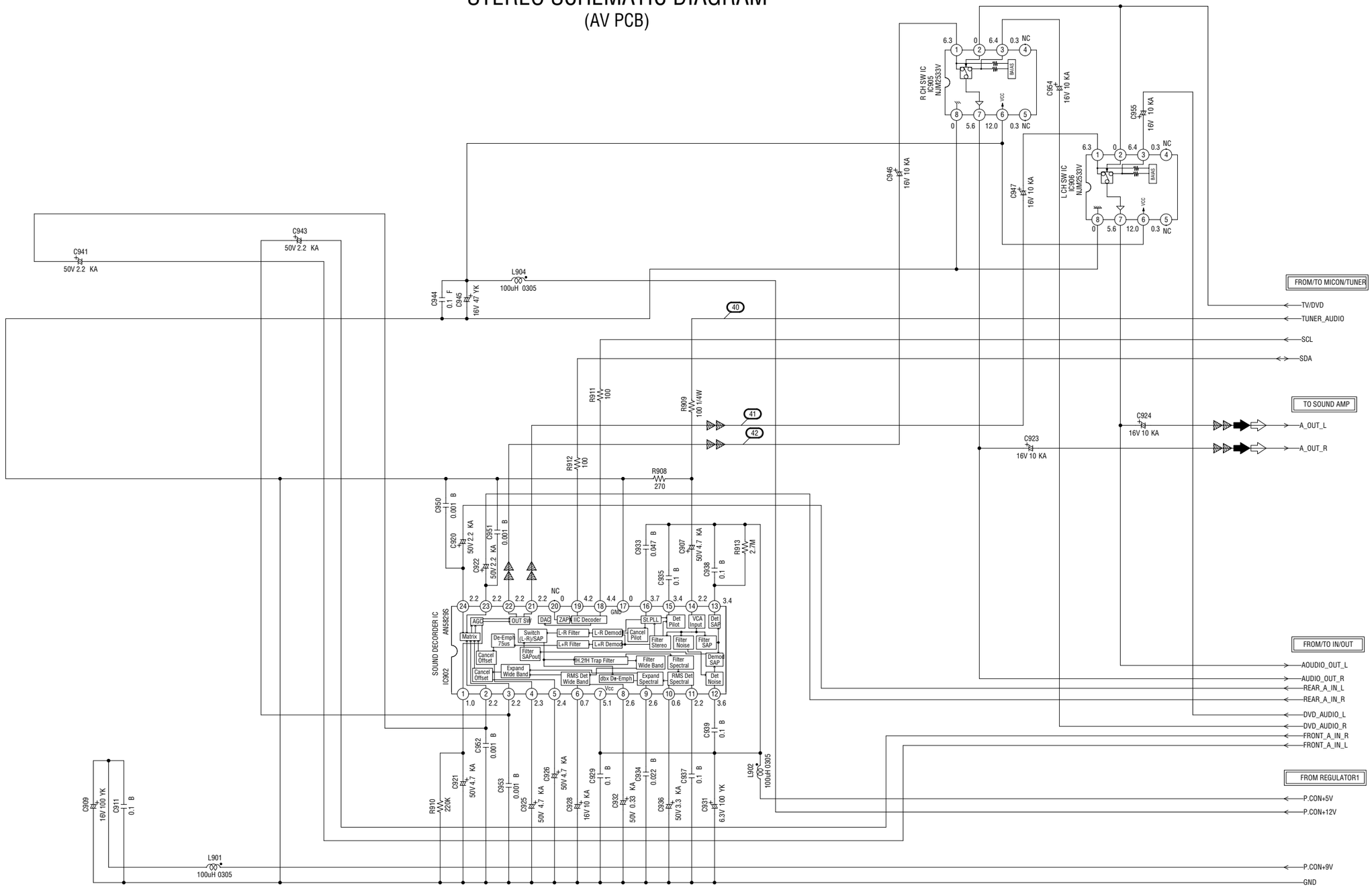
AUDIO SIGNAL
AUDIO SIGNAL(PB)
DIGITAL AUDIO SIGNAL(PB)

STEREO SCHEMATIC DIAGRAM
(AV PCB)



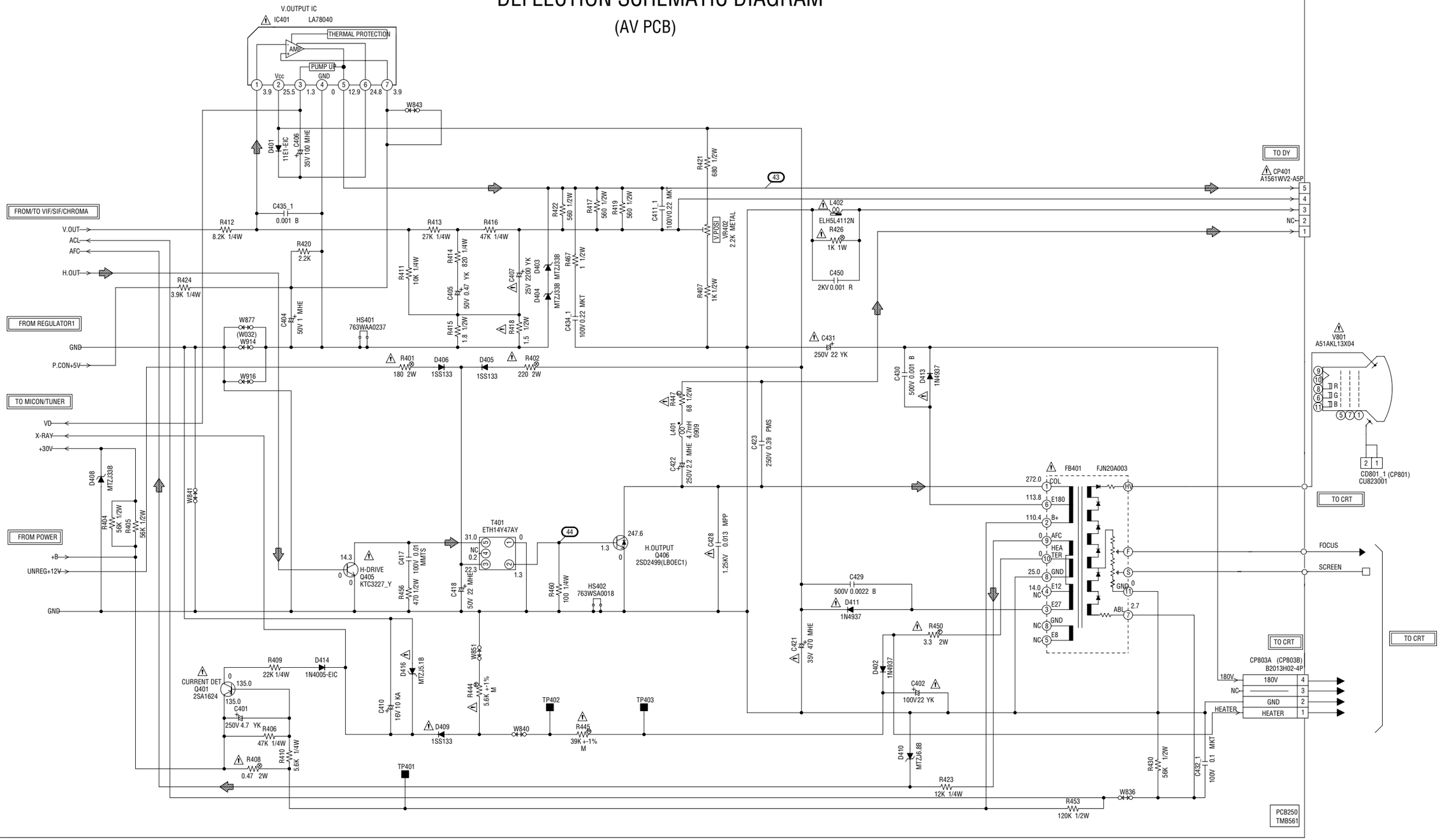
NOTE:THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE 。

TUNER AUDIO SIGNAL
AUDIO SIGNAL
AUDIO SIGNAL(PB)

DEFLECTION SCHEMATIC DIAGRAM

(AV PCB)



DEFLECTION SIGNAL

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE 。

NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

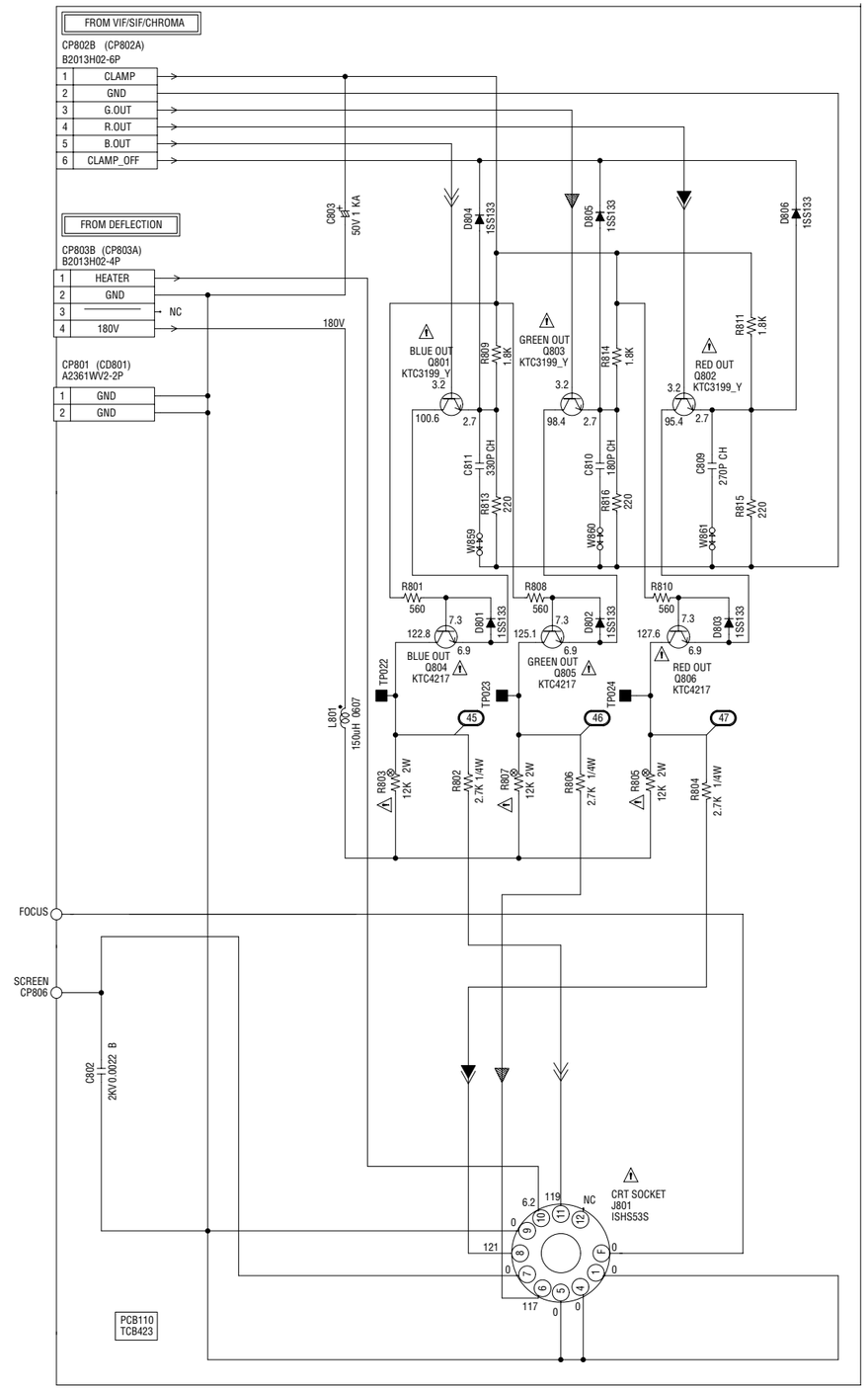
NOTE: THE RESISTOR MARKED F IS FUSE RESISTOR. THE ALUMI ELECTROLYTIC CAPACITOR MARKED NP IS NON POLAR ONE.

ATTENTION: LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES。

CAUTION SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED IN PARTS LIST ONLY 。

CRT SCHEMATIC DIAGRAM

(CRT PCB)



NOTE:THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

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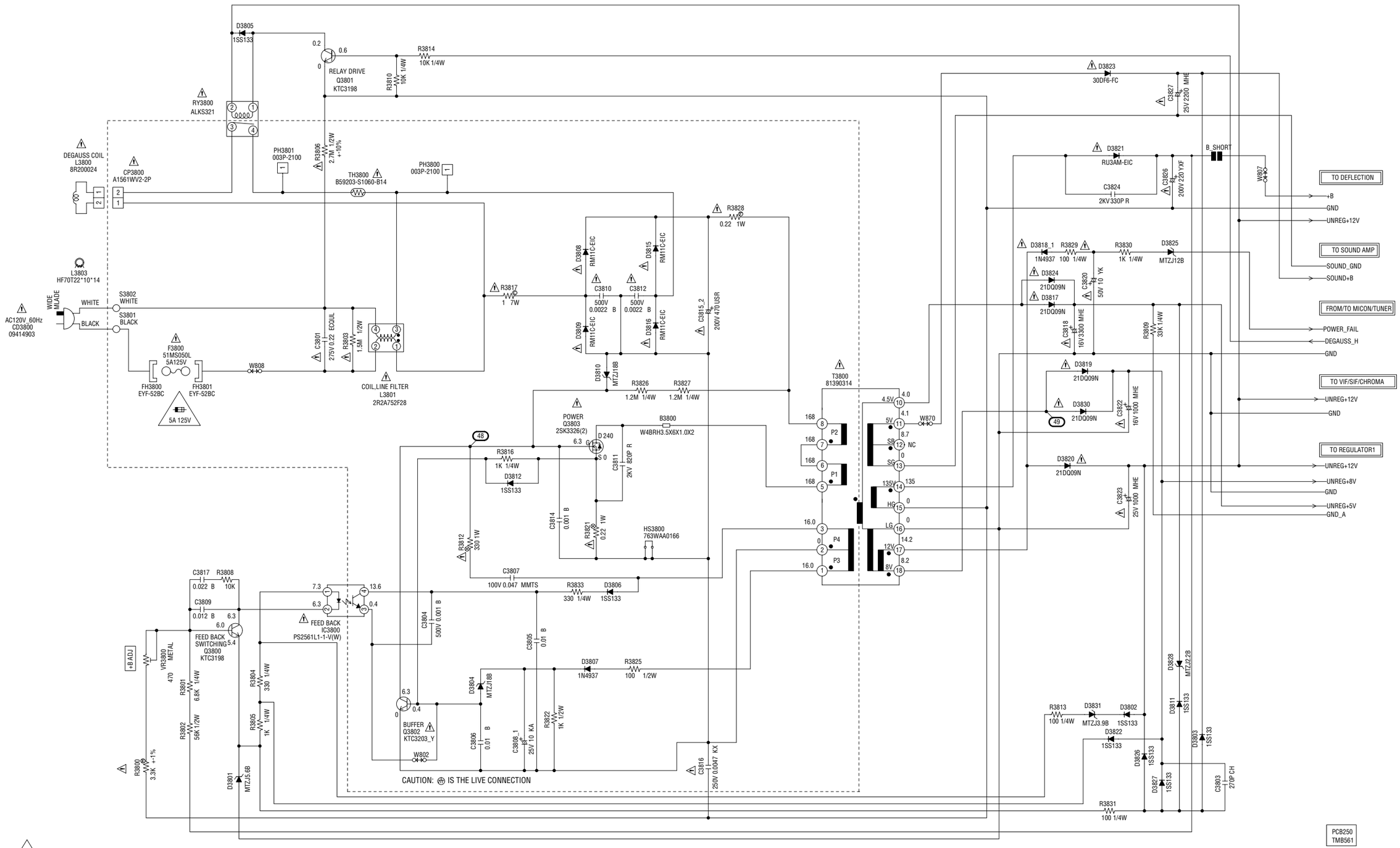
POWER SCHEMATIC DIAGRAM
(AV PCB)



5A 125V

ATTENTION :POUR UNE PROTECTION CONTINUE LES RISQUES D'INCEIE N'UTILISER QUE DES FUSIBLE DE MEME TYPE 5A 125V(F3800).

CAUTION :FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACE ONLY WITH THE SAME TYPE FUSE 5A 125V(F3800).

NOTE:THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE 。

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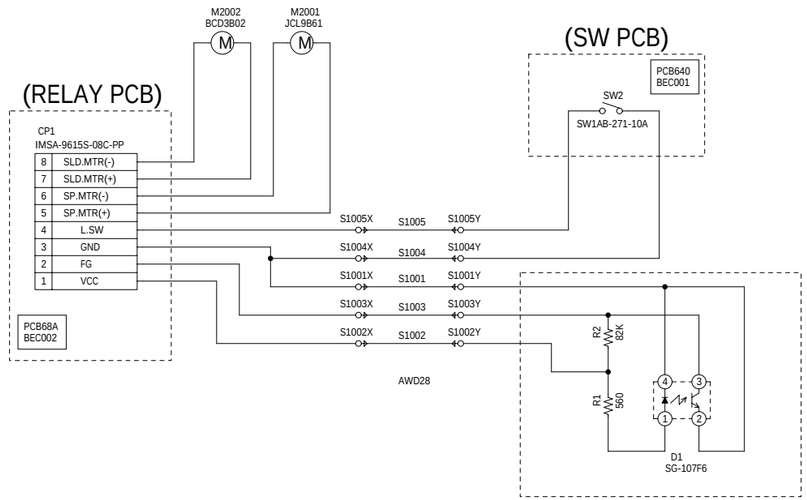
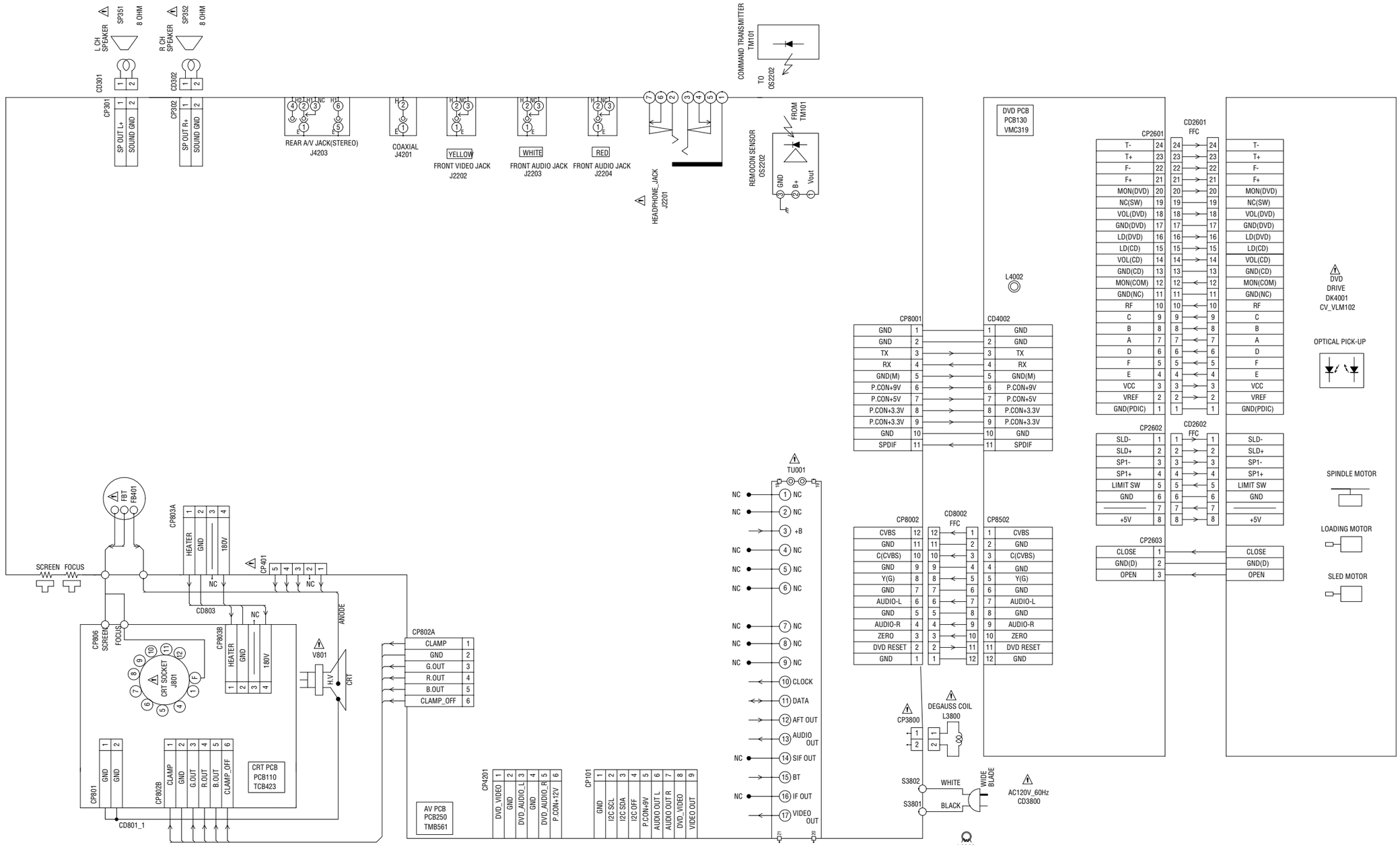
RELAY/SW/FG SCHEMATIC DIAGRAM



NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE。

NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

INTERCONNECTION DIAGRAM



NOTE: THIS INTERCONNECTION DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE 。

ATTENTION: LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES。

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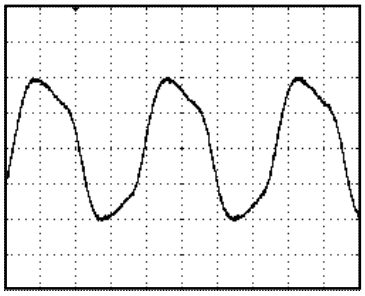
WAVEFORMS

MPEG/MICON

10ns
100mV



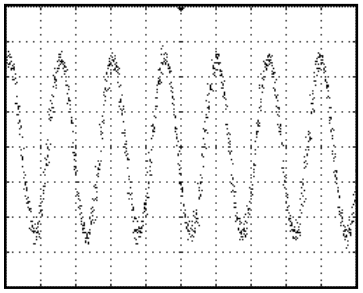
①

100ns
100mV

②

MEMORY

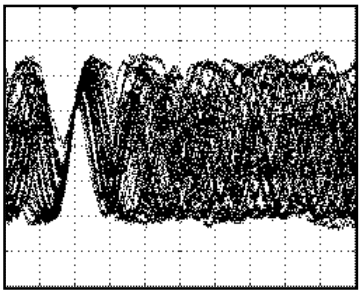
5ns
200mV



③

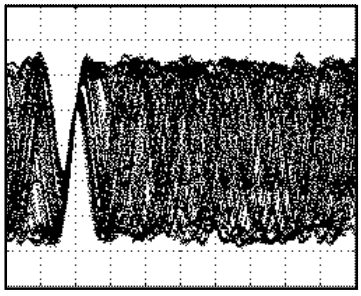
RF AMP/DSP

200ns
500mV



④

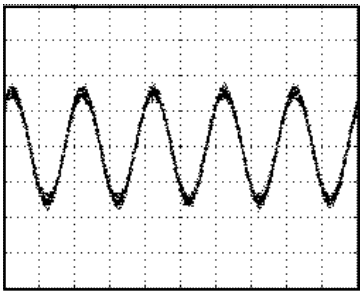
200ns
100mV



⑤

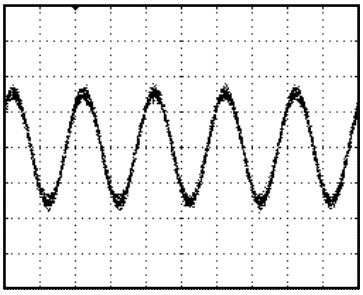
AUDIO/VIDEO

500µs
500mV



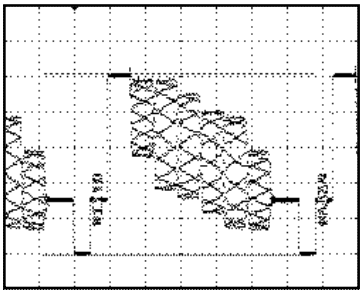
⑥

500µs
500mV



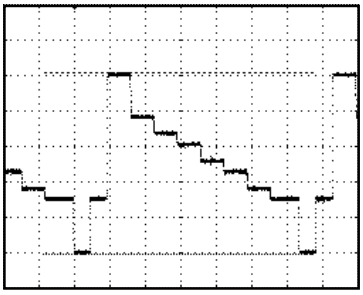
⑦

10µs
200mV



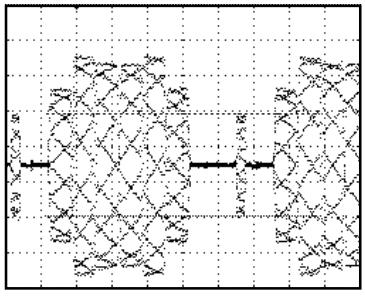
⑧

100µs
200mV



⑨

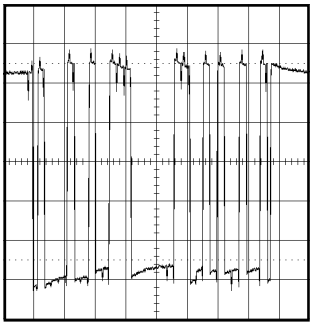
10µs
100mV



⑩

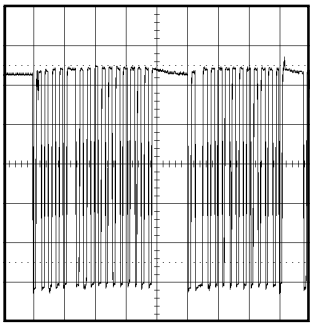
MICON/TUNER

POWER ON
0.2ms
1.0V



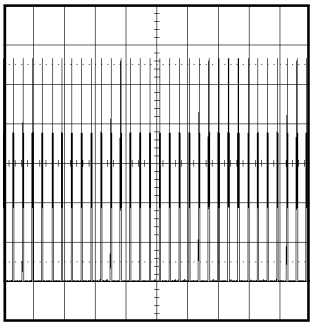
㉒

POWER ON
0.2ms
1.0V



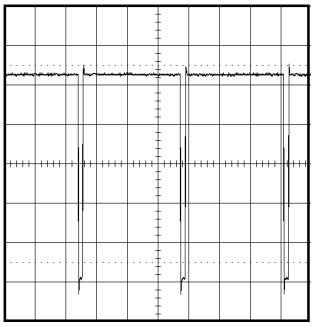
㉓

POWER ON
0.2ms
1.0V



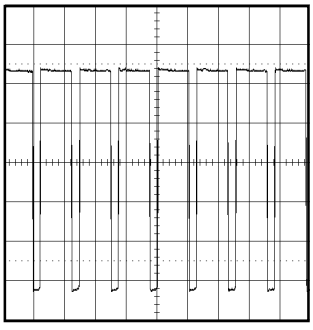
㉔

POWER ON
5ms
1.0V



㉕

POWER ON
50µs
1.0V



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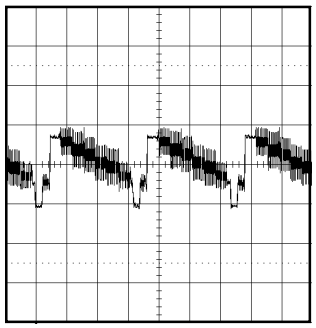
NOTE: The following waveforms were measured at the point of the corresponding balloon number in the schematic diagram.

WAVEFORMS

VIF/SIF/CHROMA

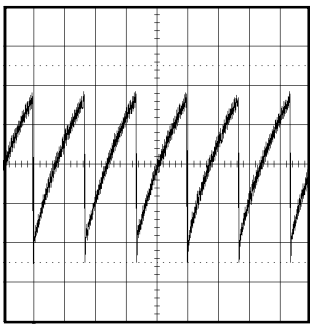
POWER ON
20µs
0.5V

27



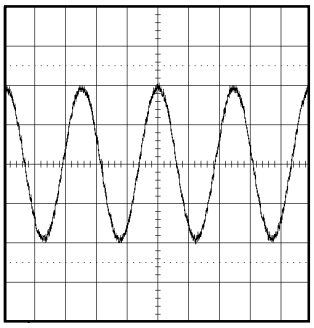
POWER ON
10ms
0.5V

32



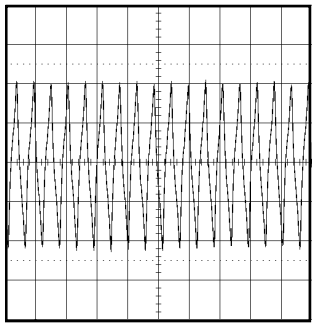
POWER ON
1ms
200mV

50



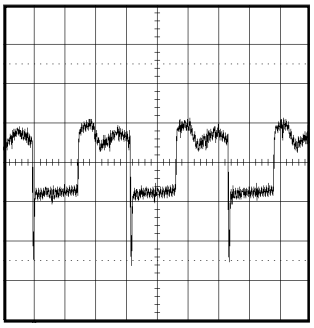
STANDBY
0.5µs
50mV

28



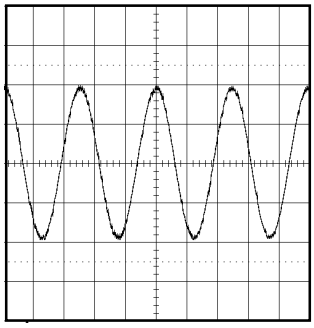
POWER ON
20µs
0.5V

33



POWER ON
1ms
200mV

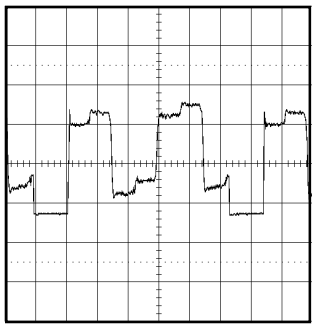
51



IN/OUT

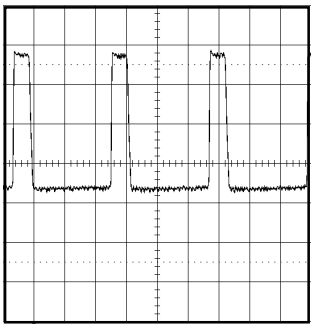
POWER ON
10µs
2.0V

29



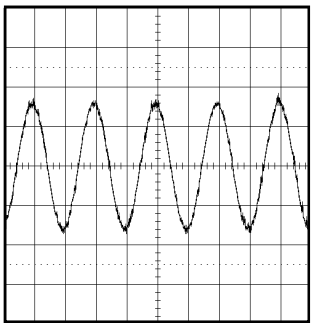
POWER ON
20µs
2.0V

34



DVD PLAY
0.5ms
200mV

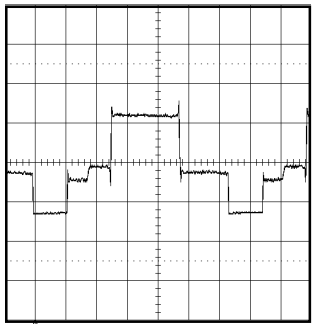
37



SOUND AMP

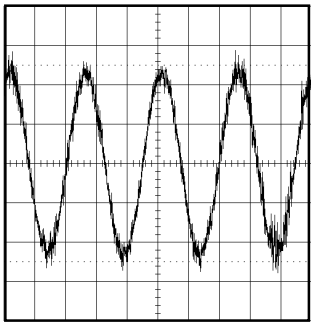
POWER ON
10µs
2.0V

30



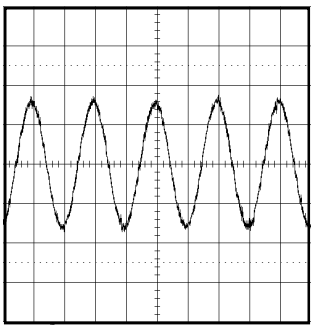
POWER ON
1ms
100mV

35



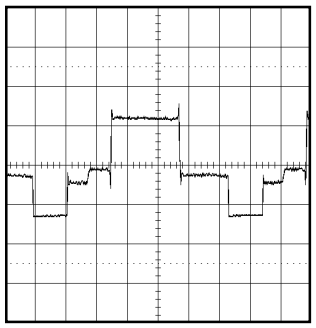
DVD PLAY
0.5ms
200mV

38



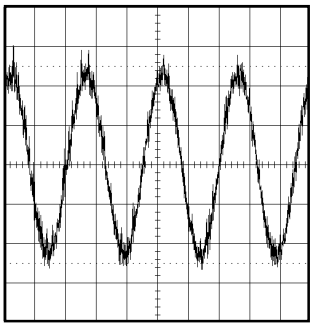
POWER ON
10µs
2.0V

31



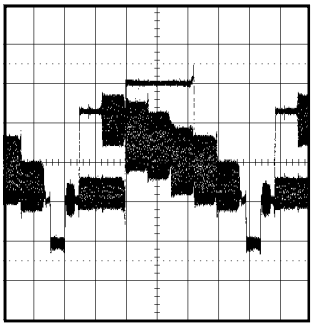
POWER ON
1ms
100mV

36



DVD PLAY
10µs
0.5V

39



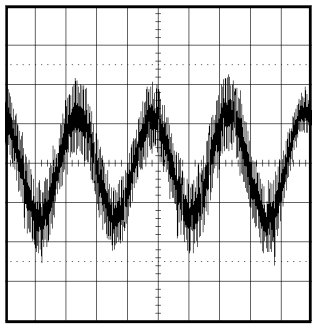
NOTE: The following waveforms were measured at the point of the corresponding balloon number in the schematic diagram.

WAVEFORMS

STEREO

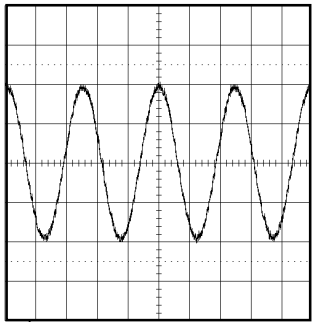
POWER ON
1ms
50mV

40



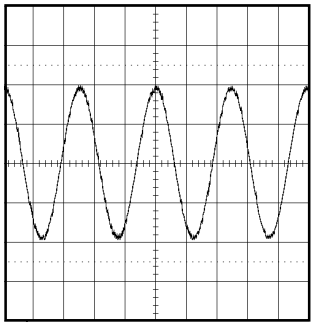
POWER ON
1ms
200mV

41



POWER ON
1ms
200mV

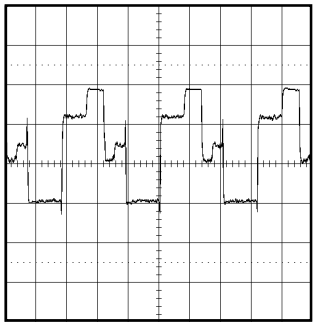
42



CRT

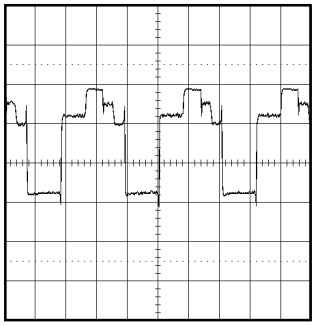
POWER ON
20µs
50V

45



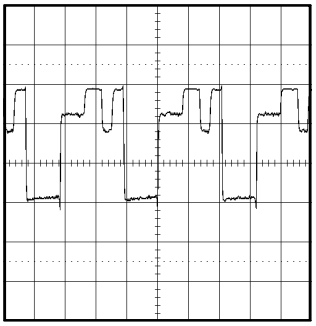
POWER ON
20µs
50V

46



POWER ON
20µs
50V

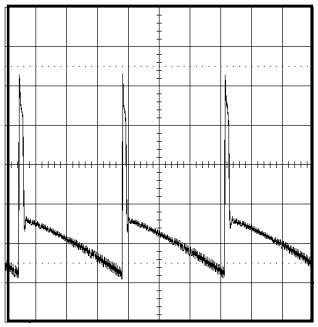
47



DEFLECTION

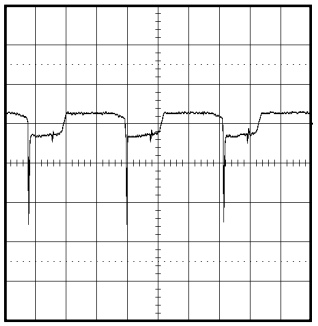
POWER ON
5ms
10.0V

43



POWER ON
20µs
5.0V

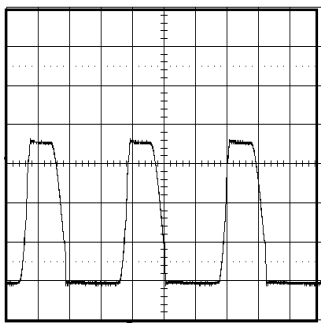
44



POWER

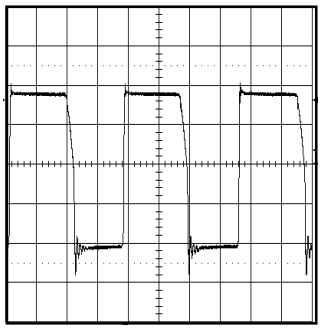
STANDBY
5µs
5.0V

48



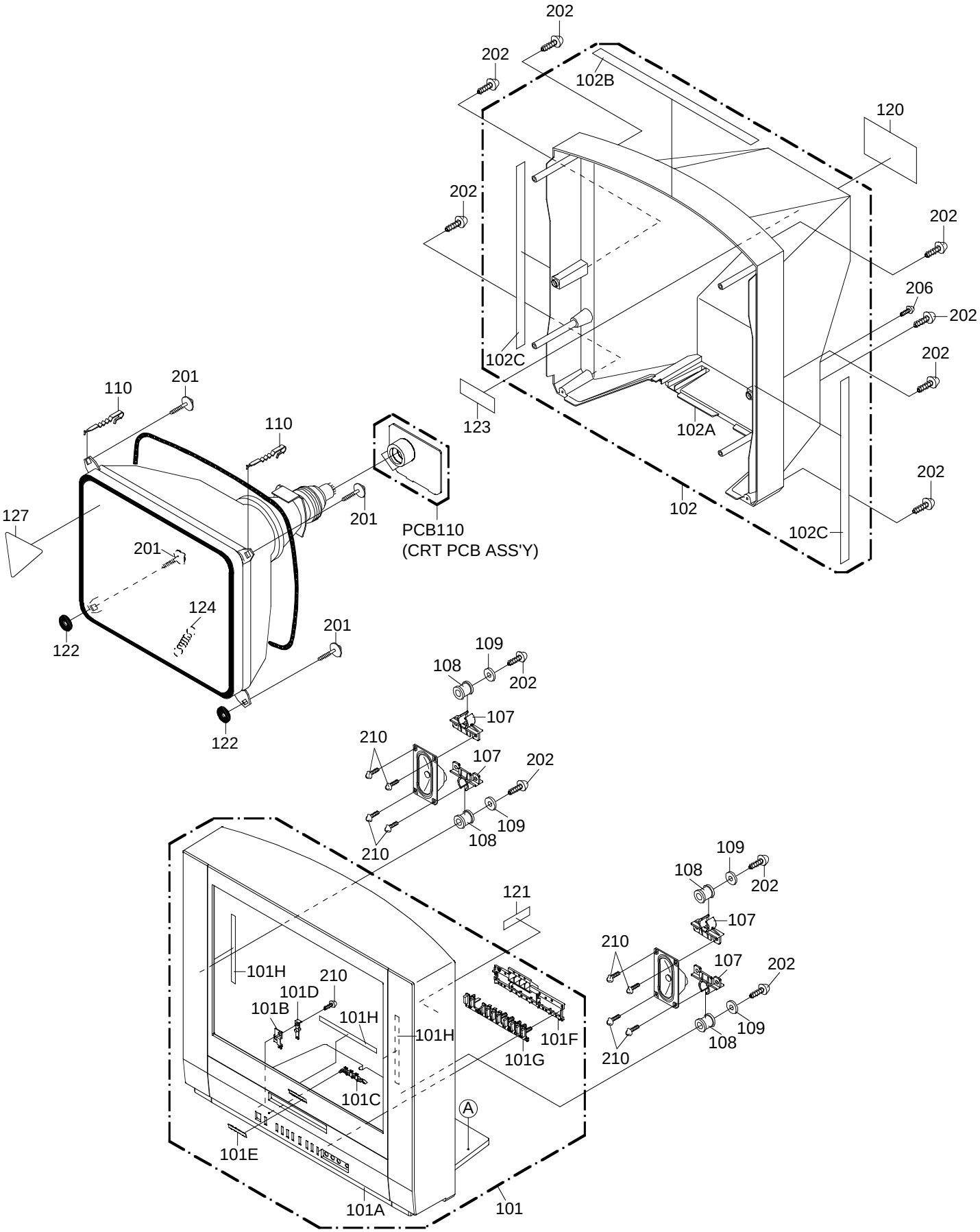
STANDBY
5µs
5.0V

49

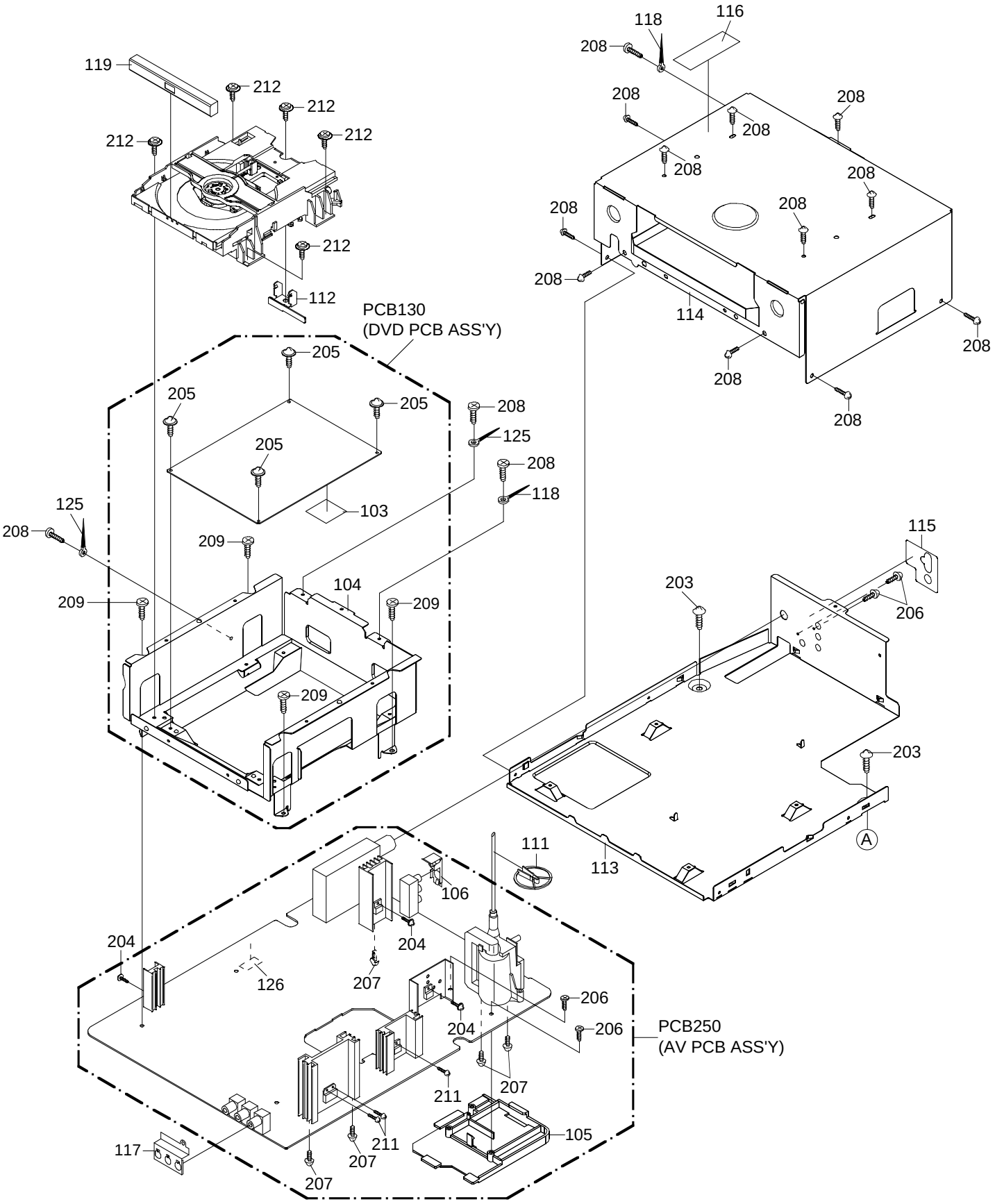


NOTE: The following waveforms were measured at the point of the corresponding balloon number in the schematic diagram.

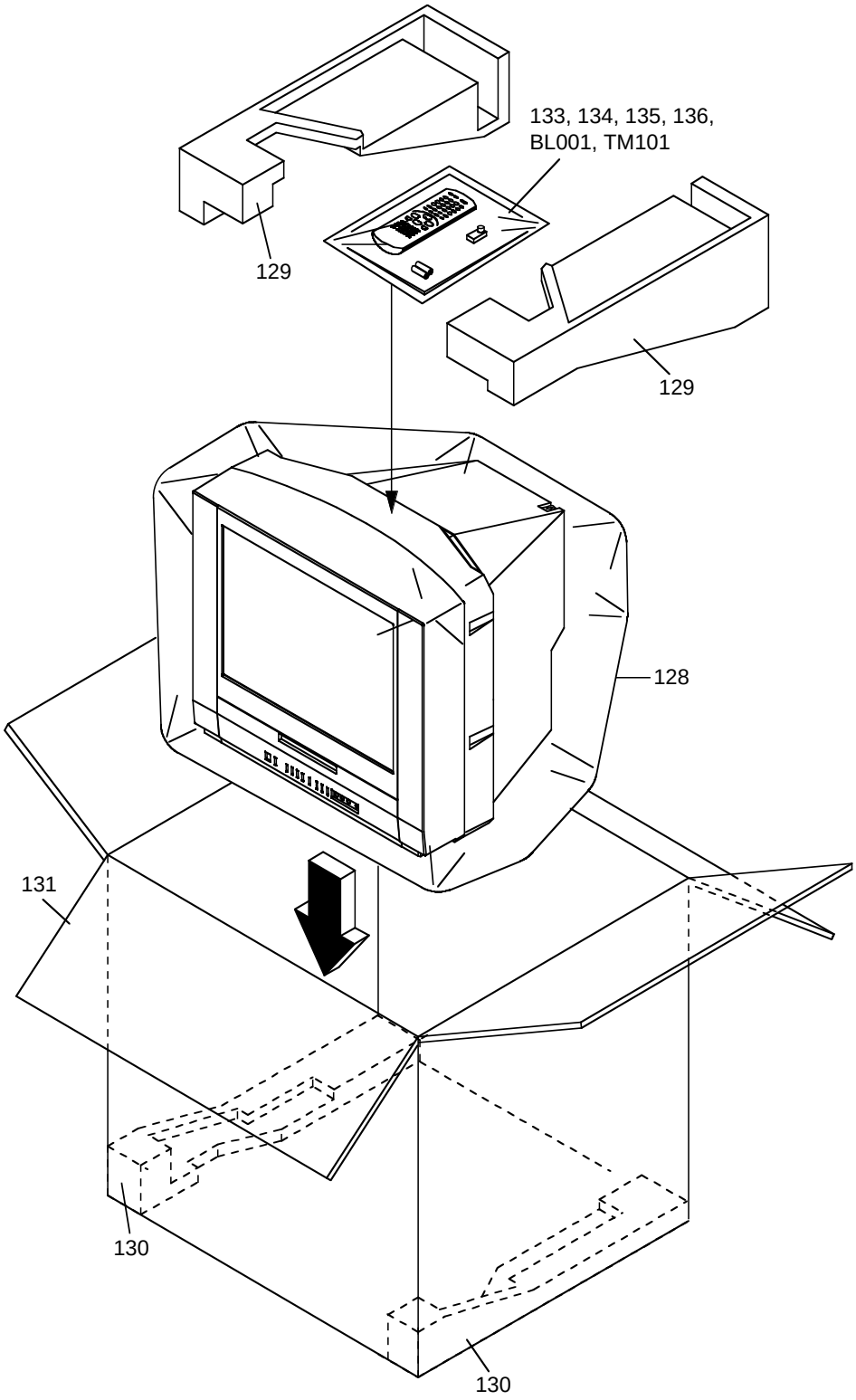
MECHANICAL EXPLODED VIEW



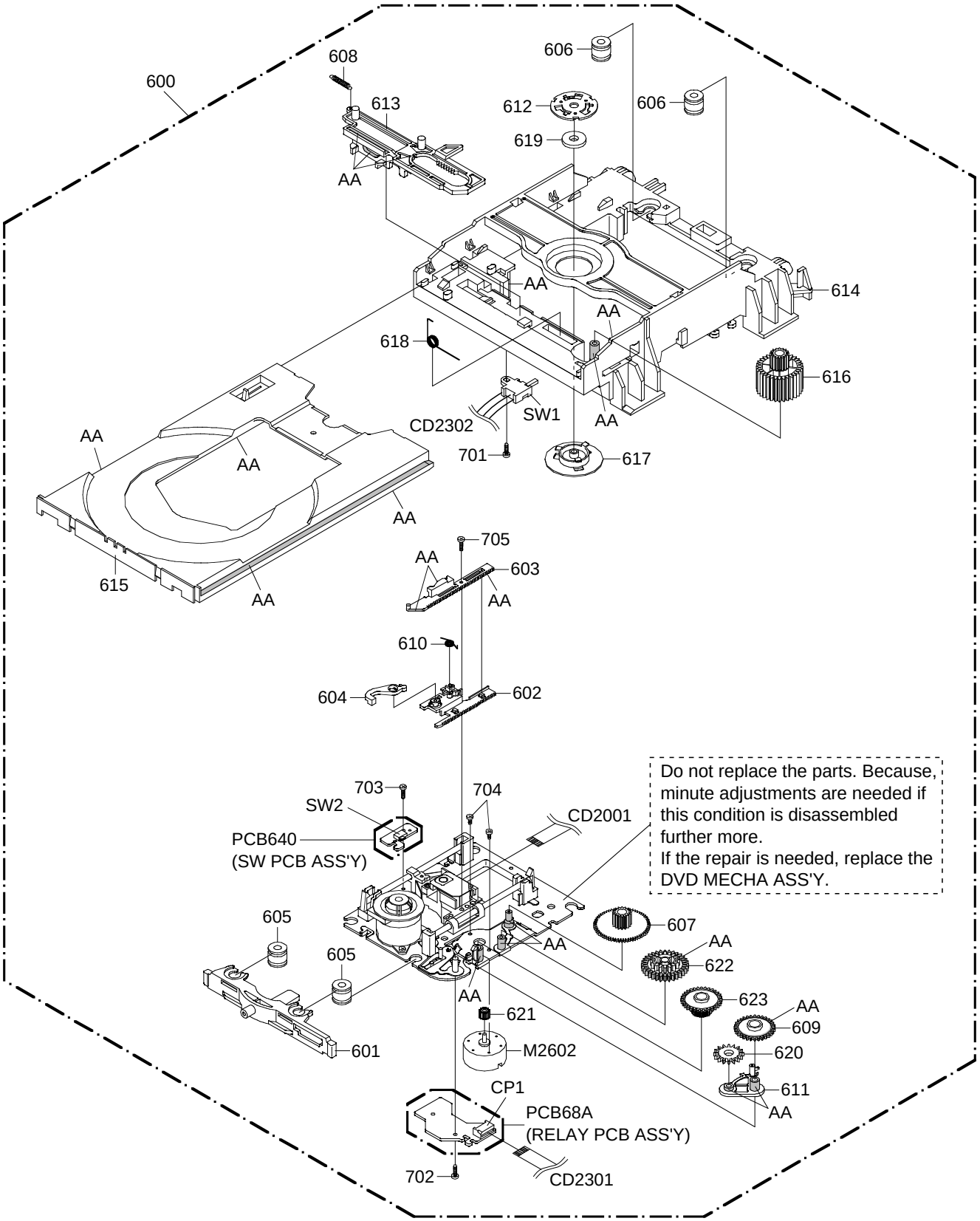
MECHANICAL EXPLODED VIEW



MECHANICAL EXPLODED VIEW
(PACKING DIAGRAM)



DVD DECK EXPLODED VIEW



CLASS	MARK
GREASE	AA

NOTE: Applying positions AA for the grease are displayed for this section.
Check if the correct grease is applied for each position.

MECHANICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.	Description	
101	AE002955	7A701A019A	FRONT CABI ASS'Y	
101A	AE002956	701WPJC501	CABINET,FRONT	
101B	AD302053	711WPA0181	PLATE,FRONT	
101C	AE003337	713WPAA131	GLASS,LED	
101D	AD302043	713WPA0254	GUIDE,REMOCON	
101E	AD302008	7235490036	BADGE,BRAND	
101F	AD302045	735WPA0718	STOPPER,BUTTON	
101G	AE002957	735WPBA951	BUTTON,FRAME	
101H	AE000723	800WQ0A008	FELT SHEET	
102	AE003093	A5K7024740	CABINET,BACK ASSY	
102A	BZ710776	702WPA0960	CABINET,BACK	
102B	AD300134	800WQ00039	FELT SHEET	
102C	AE000166	800WQ00041	FELT SHEET	
103	AE000754	7232020748	SHEET,IC	
104	AE002897	761WSA0136	ANGLE,DECK	
105	BZ710699	761WPA0249	HOLDER,FBT	
106	BZ710659	752WSA0290	SHIELD,COMPO	
107	AE003226	761WPAA090	HOLDER,SPEAKER	
108	AD300518	801WR00001	DAMPER,SPEAKER	
109	AD300519	82A40B0104	FLAT WASHER	
110	BZ710259	762WPA0011	HOLDER,CRT WIRE	
111	BZ710260	899HV3T000	HOLDER,ANODE WIRE	
112	AE002846	752WSA0384	ANGLE,DVD 2	
113	AD302047	702WSA0166	PLATE,BOTTOM	
114	AE001041	702WSA0191	SHIELD,TOP	
115	AD302048	7230007603	SHEET,JACK	
116	AD301688	7260000341	SHEET,CAUTION	
117	AD302077	752WSA0333	SHIELD,JACK	
118	BZ710039	8995034000	CORD CLIP UL CO.	
119	AE002959	712WPJB971	PLATE,TRAY-FRONT	
120	AE003094	722549A340	SHEET,RATING	
121	AD300007	7230006755	SHEET,CAUTION	
122	AE002965	800WR0A010	SHEET,CRT SUPPORT (D)	
123	AD302052	7260000344	SHEET,CRT NO.	
124	AD300759	741WUA0021	SPRING,EARTH	
125	AD300758	899EFBA001	WIRING CLIP	
126	AE000203	724WNAA002	SHEET,PVC	5x10xT=0.3
127	AE003095	723000C537	POP LABEL	
128	AE000010	791WHA0085	LAMIFILM,BAG	
129	AD302056	792WHA0422	PACKAGE,TOP	
130	AD302057	792WHA0423	PACKAGE,BOTTOM	
131	AE003096	793WCDC149	GIFT BOX	
132	AE003097	A5K7024975	INSTRUCTION BOOK KIT	
133	AE000060	JB5UD300	POLYBAG,INSTRUCTION(RED CAUTION)	
134	AE001184	J5F10129A	INFORMATION SHEET	
135	AE003098	J5K70201A	INSTRUCTION BOOK	
136	AD302404	J5500817	REGISTRATION CARD	
201	AD302054	8141J50C54	SCREW,TAP TITE(P) GW22	5x35
202	BZ710035	8117540A64	SCREW,TAPPING(B0) TRUSS	4x16
203	BZ710320	8117540804	SCREW,TAPPING(B0) TRUSS	4x8
204	BZ710239	8109I30A04	SCREW,TAP TITE(B) WH7	3x10
205	BZ710562	8109I30804	SCREW,TAP TITE(B) WH7	3x8
206	BZ710678	8109230804	SCREW,TAP TITE(B) BIND	3x8
207	BZ710019	8109630802	SCREW,TAP TITE(B) BRAZIER	3x8
208	AE001652	8109230604	SCREW,TAP TITE(B) BIND	3x6
209	BZ710581	8109230704	SCREW,TAP TITE(B) R BIND	3x7
210	BZ710031	8110630A04	SCREW,TAP TITE(P) BRAZIER	3x10
211	BZ710018	8107630804	SCREW,TAP TITE(S) BRAZIER	3x8
212	AE002618	810F130804	SEMS(F)	3x8

DVD DECK REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.		Description
600	AE002905	A5J501C650	DVD MECHA ASS'Y	A5J501C650
601	AD301822	92P100022A	TRAVERSE HOLDER	
602	AE002480	92P100080A	RACK,FEED 1A	
603	AE002481	92P100081A	RACK,FEED 2A	
604	AD301825	92P100035A	LEVER,RACK FEED	
605	AD301826	92P200006A	INSULATOR(F)	
606	AD301827	92P200007A	INSULATOR(R)	
607	AD301846	92P100029A	GEAR,FEED	
608	AE001179	92P300009A	SPRING,RACK L	
609	AD301845	92P100028A	GEAR,MIDDLE 3	
610	AE002482	92P300019A	SPRING,RACK FEED 1A	
611	AE002179	92P100040A	ARM,IDLER 2	
612	AD301833	92P000001A	CLAMPER PLATE	
613	AD301834	92P100019A	RACK,LOADING	
614	AD301835	92P100020A	MAIN FRAME M	
615	AD301836	92P100021A	TRAY	
616	AD301837	92P100023A	GEAR,MAIN	
617	AE002647	92P100082A	CLAMPER 2	
618	AD301839	92P300002A	SPRING,RACK LOADING	
619	AD301840	92P400002A	MAGNET,CLAMPER	
620	AD301847	92P100030A	GEAR,IDLER	
621	AD301842	92P100025A	GEAR,MOTOR	
622	AE002180	92P100083A	GEAR,MIDDLE 1	
623	AD301844	92P100027A	GEAR,MIDDLE 2	
701	BZ710187	8110226804	SCREW,TAP TITE(P) BIND	2.6x8
702	AD301851	8110120604	SCREW,TAP TITE(P) PAN	2x6
703	AD301852	8107220504	SCREW,TAP TITE(S) BIND	2x5
704	AD301853	8140117254	SCREW,PAN	M1.7x2.5 P3
705	AD301913	8110220804	SCREW,TAP TITE(P) BIND	2x8
CD2001	AD301855	122H0O1901	CORD JUMPER	2H0O1901
CD2301	AD301856	122H080701	CORD JUMPER	2H080701
CD2302	AE000148	06CH232101	CORD CONNECTOR	CH232101
CP1	AD301858	069JV80180	CONNECTOR PCB SIDE	IMSA-9615S-08C-PP-A
⚠ M2602	AD301861	1515S98001	FEED MOTOR	BCD3B81
PCB640	AD301862	A5E601V640	PCB ASS'Y	BEC001A
PCB68A	AD301863	A5E601V680	PCB ASS'Y	BEC002A
SW1	AD301866	0515S32001	SWITCH	SSS-23-6
SW2	AE001158	0500101036	PUSH SWITCH	ESE22MH22

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.		Description
		RESISTORS		
⚠R401	AD302023	R3X28A181J	R,METAL	180 OHM 2W
⚠R402	AD301140	R3X28A221J	R,METAL OXIDE	220 OHM 2W
⚠R408	BZ210285	R3X28AR47J	R,METAL OXIDE	0.47 OHM 2W
⚠R418	BZ210130	R002T21R5J	RC	1.5 OHM 1/2W
⚠R426	AE000676	R3K181102J	R,METAL	1K OHM 1W
⚠R444	AD300036	R4X5T6562F	R,METAL	5.6K OHM 1/6W
⚠R445	AD301011	R4X5T6393F	R,METAL	39K OHM 1/6W
⚠R447	BZ210041	R635U2680J	R,FUSE	68 OHM 1/2W
⚠R450	AD302133	R6358A3R3J	R,FUSE	3.3 OHM 2W
⚠R803	BZ210050	R3X18A123J	R,METAL OXIDE	12K OHM 2W
⚠R805	BZ210050	R3X18A123J	R,METAL OXIDE	12K OHM 2W
⚠R807	BZ210050	R3X18A123J	R,METAL OXIDE	12K OHM 2W
R2344	AE002014	R002021R2J	RC	1.2 OHM 1/2W
R2345	AE002014	R002021R2J	RC	1.2 OHM 1/2W
⚠R3800	BZ210230	R4X5T6332F	R,METAL	3.3K OHM 1/6W
⚠R3803	BZ210206	R002T2155J	RC	1.5M OHM 1/2W
⚠R3806	BZ210080	R0G3K2275K	RC	2.7M OHM 1/2W
R3809	AE002966	R00204333J	RC	33K OHM 1/4W
⚠R3812	BZ210217	R3X181331J	R,METAL OXIDE	330 OHM 1W
⚠R3817	AD302025	R5Y2CE010J	R,CEMENT	1 OHM 7W
⚠R3821	BZ210063	R3X181R22J	R,METAL OXIDE	0.22 OHM 1W
⚠R3828	BZ210190	R63581R22J	R,FUSE	0.22 OHM 1W
⚠R3829	AD301203	R002T4101J	RC	100 OHM 1/4W
		CAPACITORS		
⚠C357	AD300067	E02LF4102M	CE	1000 UF 35V
⚠C402	AD300064	E02LT8220M	CE	22 UF 100V
⚠C407	BZ210176	E02LF3222M	CE	2200 UF 25V
⚠C421	BZ110065	E5EZT4471M	CE	470 UF 35V
C423	BZ110136	P4J7F3394J	CMPP	0.39 UF 250V PMS
⚠C428	AD301978	P4N8FJ133H	CMPP	0.013 UF 1.25KV
⚠C431	BZ110204	E0ELFD220M	CE	22 UF 250V
C450	BZ110202	C0PLRR713K	CC	0.001 UF 2KV R
C802	BZ110226	C0JBB07H3K	CC	0.0022UF 2KV B
C3018	AD302087	E02L05010M	CE	1 UF 50V
⚠C3801	BZ110025	P2122B224M	CMP	0.22 UF 275V ECQUL
⚠C3810	AE001347	C0J0B05H3K	CC	0.0022UF 500V B
C3811	BZ110203	C0PLRR7W2K	CC	820 PF 2KV RR
⚠C3812	AE001347	C0J0B05H3K	CC	0.0022UF 500V B
⚠C3815	BZ110012	E51CGC471M	CE	470 UF 200V
⚠C3816	AE002878	CD39E0MQ3M	CC	0.0047UF 250V
⚠C3818	BZ110169	E5EZF2332M	CE	3300 UF 16V
⚠C3820	AD301348	E02LU5100M	CE	10 UF 50V
⚠C3822	BZ110028	E5EZT2102M	CE	1000 UF 16V
⚠C3823	BZ110032	E5EZF3102M	CE	1000 UF 25V
C3824	BZ110239	C03L0R7L2K	CC	330 PF 2KV R
⚠C3826	BZ110130	E62NFC221M	CE	220 UF 200V
⚠C3827	BZ110101	E5EZF3222M	CE	2200 UF 25V
		DIODES		
D101	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D102	BZ410021	D97U05R61B	DIODE,ZENER	MTZJ5.6B T-77
D105	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D106	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D301	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D401	BZ410043	D2WT011E10	DIODE,SILICON	11E1-EIC
D402	AD300731	D2WXN49370	DIODE,SILICON	1N4937
D403	BZ410037	D97U03301B	DIODE,ZENER	MTZJ33B T-77
D404	BZ410037	D97U03301B	DIODE,ZENER	MTZJ33B T-77
D405	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D406	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D408	BZ410037	D97U03301B	DIODE,ZENER	MTZJ33B T-77
⚠D409	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D410	BZ410022	D97U06R81B	DIODE,ZENER	MTZJ6.8B T-77
⚠D411	AD300731	D2WXN49370	DIODE,SILICON	1N4937
⚠D413	AD300731	D2WXN49370	DIODE,SILICON	1N4937
D414	BZ410085	D2WXN40050	DIODE,SILICON	1N4005-EIC
⚠D416	BZ410020	D97U05R11B	DIODE,ZENER	MTZJ5.1B T-77
D603	BZ410085	D2WXN40050	DIODE,SILICON	1N4005-EIC
D604	AD300070	D97U01201B	DIODE,ZENER	MTZJ12B T-77
D605	AD300070	D97U01201B	DIODE,ZENER	MTZJ12B T-77
D606	AD300070	D97U01201B	DIODE,ZENER	MTZJ12B T-77
D607	AD300070	D97U01201B	DIODE,ZENER	MTZJ12B T-77

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.	Description	
		DIODES		
D609	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D801	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D802	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D803	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D804	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D805	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D806	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D2201	BZ410087	0021E2Q140	LED	LTL-1CHEE-002A
D2601	BZ410121	DDARDS1200	DIODE,SILICON	KDS120RTK
D3003	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D3005	AE002972	D97U03R91A	DIODE,ZENER	MTZJ3.9A T-77
D3006	BZ410012	D28TQS04N0	DIODE,SCHOTTKY	11EQS04N-TA1B2
D3007	BZ410021	D97U05R61B	DIODE,ZENER	MTZJ5.6B T-77
D3008	BZ410012	D28TQS04N0	DIODE,SCHOTTKY	11EQS04N-TA1B2
D3801	BZ410021	D97U05R61B	DIODE,ZENER	MTZJ5.6B T-77
D3802	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D3803	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D3804	AD300671	D97U01801B	DIODE,ZENER	MTZJ18B T-77
D3805	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D3806	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D3807	AD300731	D2WXN49370	DIODE,SILICON	1N4937
⚠D3808	BZ410062	D2WTRM11C0	DIODE,SILICON	RM11C-EIC
⚠D3809	BZ410062	D2WTRM11C0	DIODE,SILICON	RM11C-EIC
D3810	AD300671	D97U01801B	DIODE,ZENER	MTZJ18B T-77
D3811	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D3812	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
⚠D3815	BZ410062	D2WTRM11C0	DIODE,SILICON	RM11C-EIC
⚠D3816	BZ410062	D2WTRM11C0	DIODE,SILICON	RM11C-EIC
⚠D3817	BZ410010	D28T21DQN9	DIODE,SCHOTTKY	21DQ09N-TA2B1
⚠D3818	AD300731	D2WXN49370	DIODE,SILICON	1N4937
⚠D3819	BZ410010	D28T21DQN9	DIODE,SCHOTTKY	21DQ09N-TA2B1
⚠D3820	BZ410010	D28T21DQN9	DIODE,SCHOTTKY	21DQ09N-TA2B1
⚠D3821	BZ410126	D2WXRU3AM0	DIODE,SILICON	RU3AM-EIC
D3822	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
⚠D3823	AD300076	D28F30DF60	DIODE,RECTIFIER	30DF6-FC
⚠D3824	BZ410010	D28T21DQN9	DIODE,SCHOTTKY	21DQ09N-TA2B1
D3825	AD300070	D97U01201B	DIODE,ZENER	MTZJ12B T-77
D3826	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D3827	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D3828	BZ410067	D97U02R21B	DIODE,ZENER	MTZJ2.2B T-77
⚠D3830	BZ410010	D28T21DQN9	DIODE,SCHOTTKY	21DQ09N-TA2B1
D3831	BZ410064	D97U03R91B	DIODE,ZENER	MTZJ3.9B T-77
D4001	BZ410119	DDDRL41480	DIODE,SILICON	MCL4148
		ICS		
IC101	AE002888	I55D06079A	IC	OEC6079A
IC103	BZ611122	I9UF032450	IC	PST3245NR
IC199	AE002973	A5K7014255	IC	S-24C04BDP-LA
IC302	AD301983	I01FF58910	IC	AN5891SA-E1V
⚠IC351	AD300056	I0FSP52760	IC	AN5276
⚠IC401	BZ611025	I03TD80400	IC	LA78040
IC601	AD301765	I03FC63190	IC	LA76319M-MPB-E
IC902	AD300059	I01FF58290	IC	AN5829S
IC905	BZ611104	I0QF02533V	IC	NJM2533V(TE2)
IC906	BZ611104	I0QF02533V	IC	NJM2533V(TE2)
IC1501	AD300609	I05FE90A45	IC	TC90A45F
IC2301	BZ611126	I03F065600	IC	LA6560
IC2601	AE002837	ICQK067080	IC	ZR36708TQC
IC2602	AD301770	I07E00358F	IC	BA10358F-E2
⚠IC3001	BZ611015	I1KA97805A	IC	KIA7805API
⚠IC3002	BZ611015	I1KA97805A	IC	KIA7805API
⚠IC3005	BZ611033	I1KA97809A	IC	KIA7809API
⚠IC3800	AD301771	000220001W	PHOTO COUPLER	PS2561L1-1-V(W)
IC4001	AE000842	ICQK067620	IC	ZR36762
IC4002	AE002137	ICRJ0C04N0	IC	AT24C04N-10SI-2.7
IC4003	BZ611130	I0GF9XZ010	IC	PQ070XZ01ZP
IC4005	AE000843	IF9J0164A7	IC	M12L64164A-7T
IC4007	BZ611129	ICMJ0800A7	IC	SST39VF800A-70-4C-EK
IC4201	AE001295	I0QJ045800	IC	NJM4580M(TE1)
IC4202	BZ611139	I0QF02534V	IC	NJM2534V(TE2)
IC4203	BZ611104	I0QF02533V	IC	NJM2533V(TE2)
IC8502	AE002835	I17F02KEG0	IC	PCM1742KEG/2K

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.	Description	
		TRANSISTORS		
Q104	BZ510108	TAAA1504SY	TRANSISTOR,SILICON	KTA1504S_Y_RTK
Q105	BZ510109	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK
Q301	BZ510108	TAAA1504SY	TRANSISTOR,SILICON	KTA1504S_Y_RTK
⚠Q401	BZ510004	TA3T016240	TRANSISTOR,SILICON	2SA1624-AA
⚠Q405	BZ510097	TCAT03227Y	TRANSISTOR,SILICON	KTC3227_Y-AT
Q406	BZ510040	TDUU024990	TRANSISTOR,SILICON	2SD2499(LB0EC1)
Q601	BZ510109	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK
Q602	BZ510109	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK
Q605	BZ510025	TPYJB05001	COMPOUND TRANSISTOR	DTA114EKAT146
⚠Q801	AD301032	TCATC3199Y	TRANSISTOR,SILICON	KTC3199_Y-AT
⚠Q802	AD301032	TCATC3199Y	TRANSISTOR,SILICON	KTC3199_Y-AT
⚠Q803	AD301032	TCATC3199Y	TRANSISTOR,SILICON	KTC3199_Y-AT
⚠Q804	BZ510009	TC3F042170	TRANSISTOR,SILICON	2SC4217(D,E)-RAC
⚠Q805	BZ510009	TC3F042170	TRANSISTOR,SILICON	2SC4217(D,E)-RAC
⚠Q806	BZ510009	TC3F042170	TRANSISTOR,SILICON	2SC4217(D,E)-RAC
Q1501	BZ510109	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK
Q1502	BZ510109	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK
Q1503	BZ510109	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK
Q2201	BZ510021	TNYJC05001	COMPOUND TRANSISTOR	DTC124EKAT146
Q2601	BZ510112	T67J1036K0	TRANSISTOR,SILICON	2SA1036KT146
Q2602	BZ510112	T67J1036K0	TRANSISTOR,SILICON	2SA1036KT146
Q2603	BZ510113	T27T030180	FET	2SK3018
Q2604	BZ510113	T27T030180	FET	2SK3018
Q2605	BZ510113	T27T030180	FET	2SK3018
⚠Q3000	BZ510057	TAAT01281Y	TRANSISTOR,SILICON	KTA1281_Y
Q3001	BZ510109	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK
⚠Q3002	BZ510057	TAAT01281Y	TRANSISTOR,SILICON	KTA1281_Y
⚠Q3003	AD301780	TCA0043690	TRANSISTOR,SILICON	KTC4369(O,Y)
⚠Q3005	BZ510105	TCAT03209Y	TRANSISTOR,SILICON	KTC3209_Y-AT
⚠Q3006	BZ510070	TCAT032034	TRANSISTOR,SILICON	KTC3203_Y-AT
Q3007	BZ510020	TNYJB05001	COMPOUND TRANSISTOR	DTC114EKAT146
⚠Q3008	BZ510070	TCAT032034	TRANSISTOR,SILICON	KTC3203_Y-AT
⚠Q3009	BZ510057	TAAT01281Y	TRANSISTOR,SILICON	KTA1281_Y
Q3010	BZ510105	TCAT03209Y	TRANSISTOR,SILICON	KTC3209_Y-AT
Q3800	BZ510069	TCATC31980	TRANSISTOR,SILICON	KTC3198-AT(Y,GR)
Q3801	BZ510069	TCATC31980	TRANSISTOR,SILICON	KTC3198-AT(Y,GR)
⚠Q3802	BZ510070	TCAT032034	TRANSISTOR,SILICON	KTC3203_Y-AT
⚠Q3803	BZ510098	T220033260	FET	2SK3326(2)
Q4004	BZ510109	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK
Q4201	BZ510109	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK
Q4203	BZ510045	TNYJD05001	COMPOUND TRANSISTOR	DTC144EKAT146
Q4209	BZ510021	TNYJC05001	COMPOUND TRANSISTOR	DTC124EKAT146
Q4210	BZ510081	TPYJA05001	COMPOUND TRANSISTOR	DTA143EKAT146
Q4211	BZ510109	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK
Q4212	BZ510109	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK
Q8502	BZ510108	TAAA1504SY	TRANSISTOR,SILICON	KTA1504S_Y_RTK
Q8503	BZ510108	TAAA1504SY	TRANSISTOR,SILICON	KTA1504S_Y_RTK
Q8504	BZ510108	TAAA1504SY	TRANSISTOR,SILICON	KTA1504S_Y_RTK
		COILS &TRANSFORMERS		
L001	BZ310156	021375101K	COIL	100 UH
L101	BZ310030	021LA6560K	COIL	56 UH
L301	BZ310156	021375101K	COIL	100 UH
L401	BZ310004	021679472K	COIL	4.7 MH
⚠L402	BZ310013	0221000013	COIL,LINEARITY	ELH5L4112N
L601	BZ310041	02167F101J	COIL	100 UH
L602	BZ310113	021673221K	COIL	220 UH
L801	BZ310069	02167D151K	COIL	150 UH
L901	BZ310041	02167F101J	COIL	100 UH
L902	BZ310041	02167F101J	COIL	100 UH
L904	BZ310041	02167F101J	COIL	100 UH
L1501	AD300613	02167F150J	COIL	15 UH
L1502	AD300613	02167F150J	COIL	15 UH
L1503	AD300614	021673821K	COIL	820 UH
L1504	AD300615	02167F151J	COIL	150 UH
L1505	BZ310077	021LA61R0M	COIL	1 UH
L3000	AD301785	02167E100K	COIL	R6-1 10 UH
L3001	BZ310091	021W7A220K	COIL	22 UH
⚠L3800	BZ310066	028R200024	COIL,DEGAUSS	8R200024
⚠L3801	BZ310180	029T000105	COIL,LINE FILTER	2R2A752F28
L3803	AD301539	02AHB0A0A4	CORE,FERRITE	W5T_20*10*10A
L4001	BZ310191	02167F2R2J	COIL	2.2 UH

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.	Description	
		JACKS		
L4002	BZ310118	02AHB9A972	CORE,FERRITE	W5T29X7.5X19
L4201	BZ310041	02167F101J	COIL	100 UH
L4202	BZ310041	02167F101J	COIL	100 UH
L4203	BZ310041	02167F101J	COIL	100 UH
L4205	BZ310041	02167F101J	COIL	100 UH
L8502	AE000828	02167F1R0K	COIL	1 UH
L8503	AE000828	02167F1R0K	COIL	1 UH
L8504	AE000828	02167F1R0K	COIL	1 UH
T401	BZ310172	045013003J	TRANS,HORIZONTAL DRIVE	ETH14Y47AY
⚠T3800	AD302030	0481390314	TRANSFORMER,SWITCHING	81390314
⚠J801	AD301356	066F130020	SOCKET,CATHODE RAY,TUBE	ISHS53S
⚠J2201	BZ614361	060J131015	HEADPHONE JACK	MSJ-2000
J2202	AE002949	060J421036	RCA JACK	MTJ-032-05A-30-FE
J2203	AE002950	060J421037	RCA JACK	MTJ-032-05A-32-FE
J2204	AE002951	060J421030	RCA JACK	MTJ-032-05A-31-FE
J4201	BZ614400	060J401082	RCA JACK	MSP-251V-05PBSN
J4203	AD301038	060J431019	RCA JACK	MSP-213V2-432 PBSN
		SWITCHES		
SW2213	BZ612010	0504101T34	SWITCH,TACT	EVQ21505R
SW2214	BZ612010	0504101T34	SWITCH,TACT	EVQ21505R
SW2215	BZ612010	0504101T34	SWITCH,TACT	EVQ21505R
SW2216	BZ612010	0504101T34	SWITCH,TACT	EVQ21505R
SW2217	BZ612010	0504101T34	SWITCH,TACT	EVQ21505R
SW2218	BZ612010	0504101T34	SWITCH,TACT	EVQ21505R
SW2219	BZ612010	0504101T34	SWITCH,TACT	EVQ21505R
SW2220	BZ612010	0504101T34	SWITCH,TACT	EVQ21505R
SW2221	BZ612010	0504101T34	SWITCH,TACT	EVQ21505R
SW2223	BZ612010	0504101T34	SWITCH,TACT	EVQ21505R
		VARIABLE RESISTORS		
VR402	BZ210218	V1K63H3BTE	VOLUME,SEMI FIXED	NVG6TLTAB222
VR3800	BZ210265	V1K63Q2BTE	VOLUME,SEMI FIXED	NVG6TLTAB471
		P.C.BOARD ASSEMBLIES		
PCB110	AE002974	A5K7014110	PCB ASS'Y	TCB423A
PCB130	AE002975	A5K7014130	PCB ASS'Y	VMC319A
PCB250	AE002976	A5K7014250	PCB ASS'Y	TMB561A
		MISCELLANEOUS		
B2601	BZ310186	024HC31022	CORE,BEADS	FCM2012H-102T04
B2602	BZ310186	024HC31022	CORE,BEADS	FCM2012H-102T04
B2603	BZ310186	024HC31022	CORE,BEADS	FCM2012H-102T04
B2604	BZ310186	024HC31022	CORE,BEADS	FCM2012H-102T04
B2605	BZ310186	024HC31022	CORE,BEADS	FCM2012H-102T04
B3001	BZ310121	024HT03553	CORE,BEADS	W5RH3.5X5X1.0
B3800	BZ310122	024HT03563	CORE,BEADS	W4BRH3.5X6X1.0X2
B4001	BZ310186	024HC31022	CORE,BEADS	FCM2012H-102T04
B4002	BZ310186	024HC31022	CORE,BEADS	FCM2012H-102T04
B4003	BZ310186	024HC31022	CORE,BEADS	FCM2012H-102T04
B4004	BZ310186	024HC31022	CORE,BEADS	FCM2012H-102T04
B4005	BZ310186	024HC31022	CORE,BEADS	FCM2012H-102T04
B4006	BZ310186	024HC31022	CORE,BEADS	FCM2012H-102T04
B4007	BZ310186	024HC31022	CORE,BEADS	FCM2012H-102T04
B4008	BZ310186	024HC31022	CORE,BEADS	FCM2012H-102T04
B4009	BZ310122	024HT03563	CORE,BEADS	W4BRH3.5X6X1.0X2
B4010	BZ310186	024HC31022	CORE,BEADS	FCM2012H-102T04
B4201	BZ310121	024HT03553	CORE,BEADS	W5RH3.5X5X1.0
B8502	BZ310186	024HC31022	CORE,BEADS	FCM2012H-102T04
B8503	BZ310186	024HC31022	CORE,BEADS	FCM2012H-102T04
BL001	BZ310014	023C00022A	COIL,BALUN	HPN-01
BT001	AE000012	1412004008	BATTERY,MANGAN	R03(AB)E_2P_G
BT002	AE000012	1412004008	BATTERY,MANGAN	R03(AB)E_2P_G
CD301	AD302035	06CU123801	CORD,CONNECTOR	CU123801
CD302	AD302035	06CU123801	CORD,CONNECTOR	CU123801
CD801	BZ614378	06CU823001	CORD,CONNECTOR	CU823001
CD802	AD302036	WDL6040038	FLAT CABLE AWM2468 A	WG26 6C BLACK 400MM
CD803	AE002362	WBL6034038	FLAT CABLE AWM2468 A	WG26 4C BLACK 340MM
CP101	BZ614458	069S290629	CONNECTOR PCB SIDE	A2001WV2-9P
CP301	BZ614268	069W120029	CONNECTOR PCB SIDE	TID-X02P-M1
CP302	BZ614268	069W120029	CONNECTOR PCB SIDE	TID-X02P-M1
⚠CP401	BZ614303	069S450089	CONNECTOR PCB SIDE	A1561WV2-A5P
CP801	BZ614269	069S320010	CONNECTOR PCB SIDE	A2361WV2-2P
CD3800	AD300685	120R414903	CORD,AC BUSH	0R414903
CD4002	BZ614299	06CU2B2001	CORD,CONNECTOR	CU2B2001

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.	Description	
		RESISTORS		
CD8501	AD301792	122H0C1001	CORD,JUMPER	2H0C1001
CP2601	AD302396	069JYOT099	CONNECTOR PCB SIDE	IMSA-9631S-24Y901
CP2602	AD301858	069JV80180	CONNECTOR PCB SIDE	IMSA-9615S-08C-PP
CP2603	AD301795	069S230639	CONNECTOR PCB SIDE	A2001WR2-3P
⚠CP3800	AD300687	069S420110	CONNECTOR PCB SIDE	A1561WV2-2P
CP4201	BZ614242	069S260629	CONNECTOR PCB SIDE	A2001WV2-6P
CP8001	BZ614214	069S2B0629	CONNECTOR PCB SIDE	A2001WV2-11P
CP8002	AD301797	069J7C0029	CONNECTOR PCB SIDE	IMSA-9604S-12Z14
CP802A	BZ614333	067U006049	WIRE HOLDER	B2013H02-6P
CP802B	BZ614333	067U006049	WIRE HOLDER	B2013H02-6P
CP803A	BZ614334	067U004029	WIRE HOLDER	B2013H02-4P
CP803B	BZ614334	067U004029	WIRE HOLDER	B2013H02-4P
CP8502	AD301798	069J7C0019	CONNECTOR PCB SIDE	IMSA-9604S-12Z13
EL001	BZ614044	124120301A	EYE LET	XRY20X30BD
EL002	BZ614043	124116281A	EYE LET	XRY16X28BD
⚠F3800	BZ614504	081PC05005	FUSE	51MS050L
⚠FB401	AD302038	043220058F	TRANSFORMER,FLYBACK	FJN20A003
FH3800	AE002634	06710T0009	HOLDER,FUSE	EYF-52BCY
FH3801	AE002634	06710T0009	HOLDER,FUSE	EYF-52BCY
OS2202	BZ614199	077Q004017	REMOTE RECEIVER	PIC-37243SR
PH3800	BZ614444	069D01001A	CONNECTOR PCB SIDE	003P-2100
PH3801	BZ614444	069D01001A	CONNECTOR PCB SIDE	003P-2100
⚠RY3800	AD300114	0560V20115	RELAY	ALKS321
⚠SP351	BZ614381	070C546004	SPEAKER	SG04H02BRA
⚠SP352	BZ614381	070C546004	SPEAKER	SG04H02BRA
TM101	AD301799	076D0GD010	TRANSMITTER	TOT201N09160
⚠TU001	AE000273	0163300005	RF UNIT	115-V-K015AR_B
⚠TH3800	AD302000	D8EE0B1400	DEGAUSS ELEMENT	B59203-S1060-B14
⚠V801	AD302039	098Q210448	CRT W/DY	A51AKL13X04
X101	BZ613019	1002T01606	CERAMIC OSCILLATOR	CSTLS16M0X53-A0
X601	AD302003	100CT3R505	CRYSTAL	HC-49/C
X4001	AD301803	100BT02701	CRYSTAL	HC-49U/S

RESISTOR

RC..... CARBON RESISTOR

CAPACITORS

CC..... CERAMIC CAPACITOR
CE..... ALUMI ELECTROLYTIC CAPACITOR
CP..... POLYESTER CAPACITOR
CPP..... POLYPROPYLENE CAPACITOR
CPL..... PLASTIC CAPACITOR
CMP..... METAL POLYESTER CAPACITOR
CMPL..... METAL PLASTIC CAPACITOR
CMPP..... METAL POLYPROPYLENE CAPACITOR

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